DRAFT Refined Environmental Justice Assessment

In support of the US EPA Region 9 PCB Permit Decision for the

Chemical Waste Management

Kettleman Hills Facility

February 2007

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EXECUTIVE SUMMARY

In 1997, Chemical Waste Management, Inc., (CWM) and Waste Management, Inc., applied to the United States Environmental Protection Agency Region 9 (US EPA) to renew its permit issued under the Toxic Substances Control Act (TSCA) to continue to store and dispose of polychlorinated biphenyls (PCBs) at the Kettleman Hills Facility located in Kings County, California. During US EPA's review of the initial permit application, CWM modified its application to request a coordinated approval in 2003. The coordinated approval is a permit issued by US EPA that builds on the existing State of California Department of Toxic Substance Control's (DTSC's) RCRA hazardous waste permit.[1] US EPA Region 9 conducted this Draft Environmental Justice (EJ) Assessment in conjunction with its review of the 2003 permit application.

Environmental Justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Because community residents and others have raised EJ concerns in the past, US EPA started with a thorough review of community concerns to help guide US EPA's evaluation of potential EJ issues in the nearby communities. An EJ Assessment is an evaluation of the environmental, health, economic and social issues in a community, with a focus on the impacts a facility (in this case CWM's Kettleman Hills Facility) will have on the local community.

Based on community concerns, this Draft EJ Assessment studied 30 environmental, community health, economic and social indicators in Kettleman City and Avenal. These included air quality, spills, compliance records, asthma, cancer, and drinking water. In 2004, US EPA published a *Toolkit for Assessing Potential Allegations of Environmental Injustice.* Consistent with this *Toolkit*, a situation may pose an EJ concern where an action has or may have *both* a disproportionately high *and* adverse impact on a community.

Based on the indicators analyzed in this Draft EJ Assessment, US EPA has not found evidence that the communities of Kettleman City and Avenal experience adverse impacts from the Kettleman Hills Facility. However, for the broader community (i.e. potential exposures within Kettleman City and Avenal unrelated to the Kettleman Hills Facility), risk and modeling information for other activities in the local area is not available. Therefore, US EPA is unable to determine whether or not the communities of Kettleman City and Avenal suffer from EJ impacts from activities unrelated to the facility. More specifically, US EPA makes an "inconclusive" finding about whether impacts from diesel and pesticides pose a disproportionately high and adverse impact to the communities of Kettleman City and Avenal.

US EPA used the results of this Draft EJ Assessment during the review of the TSCA application to help (1) highlight areas for more thorough consideration and evaluation, (2) develop proposed permit conditions, and (3) plan public participation activities. Based on the Draft EJ Assessment, the Draft TSCA Permit has stronger requirements for preparing for emergencies and for safe closure of the facility once it no longer operates, and it requires an air risk analysis. All of these changes are concerns residents have raised. US EPA also finds that in Kettleman City and Avenal, many of the community residents speak Spanish, so we have prepared more of the presentation and materials in Spanish. In addition, EPA is putting information in more repositories and more newspapers.

US EPA is asking for public comment on the Draft EJ Assessment and will consider all comments before finalizing the Draft EJ Assessment. Because an important part of an EJ Assessment is identifying community concerns, US EPA is especially interested in feedback on this section. In addition, US

[1] The Resource Conservation and Recovery Act (RCRA) of 1976 is the federal law that regulates the generation, transportation, treatment, storage and disposal of hazardous wastes. RCRA is administered primarily by the states, under their own laws, pursuant to authorization from US EPA, which must determine that the state program is *consistent with,* and *no less stringent than* EPA's own hazardous waste program. The State of California's Department of Toxic Substances Control (DTSC) implements RCRA in California.

EPA is interested in feedback on the EJ indicators that were selected and how well they characterize the concerns in Kettleman City and Avenal. If anyone has additional concerns or additional data he or she wants to include in the Final EJ Assessment, please submit written comments or attend the public hearing and provide spoken comments.

After US EPA closes the public comment period, we will review and consider all comments for both the Draft EJ Assessment and the Draft Permit, prepare a summary of responses, and make a decision on the Draft Permit. The decision could be to a) issue the Draft Permit as a Final Permit, b) revise the Draft Permit and issue it as a Final Permit, or c) deny the CWM request for a permit. US EPA will also prepare a Final EJ Assessment.

If you have questions or comments, please

1. Call EPA at (800) 962-6215

2. Send email to KettlemanComments@epa.gov, or

3. Contact Debbie Lowe at

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I. INTRODUCTION AND BACKGROUND

A. Purpose

US EPA prepared this Draft EJ Assessment as part of US EPA's review of the Toxic Substances Control Act (TSCA) permit application to continue to store and dispose of polychlorinated biphenyls (PCBs) at the Kettleman Hills Facility (KHF) ("Draft PCB Permit"). The Draft EJ Assessment is an evaluation of potential environmental justice (EJ) issues in the communities near the Kettleman Hills Facility (KHF). This Draft EJ Assessment highlighted areas for evaluation and consideration in developing the proposed permit conditions and public participation activities related to the continued storage and disposal of polychlorinated biphenyls (PCBs) at KHF.

Because community residents and others have raised EJ concerns in the past, US EPA started with a thorough review of community concerns to help guide US EPA's evaluation of potential EJ issues in the nearby communities. US EPA then used the results of this Draft EJ Assessment during the review of the TSCA permit application to help (1) highlight areas for consideration and evaluation, (2) develop proposed permit conditions, and (3) plan public participation activities. US EPA is soliciting public comment on the Draft EJ Assessment and will consider all comments before finalizing the Draft EJ Assessment and the Draft PCB Permit.

B. Overview of the Environmental Justice Assessment Methodology

In an effort to provide a framework in which to help US EPA sort through available information, the Office of Environmental Justice (OEJ) issued the "Toolkit for Assessing Potential Allegations of Environmental Injustice" ("EJ Toolkit"). This Draft EJ Assessment based the method and framework on the EJ Toolkit. Consistent with provisions of the US EPA's EJ Toolkit, a situation may pose an EJ concern where an action has or may have *both* a "disproportionately high"[2] *and* "adverse"[3] impact on a community. An action that has an adverse effect, for example, would not necessarily trigger EJ concerns if it affected many populations equally. For example, the San Joaquin Valley air basin violates ozone standards, so ozone may lead to adverse health effects in multiple parts of the Valley, not just in Kettleman City and Avenal. More details about this example appear later in this document. Similarly, a "disproportionately high" impact is not necessarily an EJ concern unless it is also adverse.

The EJ Toolkit proposes an overall EJ Assessment methodology and suggests that to be cost-effective and to maximize usefulness, an EJ Assessment should generally follow a tiered approach where it can be conducted in phases, on an as-needed basis. US EPA Region 9 generally followed the framework and the methodology suggested in the EJ Toolkit in conducting this Draft EJ Assessment. As Region 9's first attempt to apply the EJ Toolkit to an EJ Assessment, this study examined indicators in a great deal more detail than we would typically expect to do in the future. Region 9 will tailor the scope and depth of future EJ Assessments on a case-by-case basis. Appendix A gives a summary of the EJ Toolkit.

C. EJ Indicators Framework

EJ indicators are data from national or state databases that highlight some aspect of current conditions and trends in the environment or within a community or geographic area. They provide information that can be used in an EJ Assessment to supplement, as appropriate, information more specific to the environmental decision being evaluated (e.g., impacts from a facility being sited or permitted).[4] The EJ Toolkit recommends evaluation of EJ indicators in four categories: environmental, health, economic,

[2] The EJ Toolkit calls for comparison with a reference community to determine if an impact is "disproportionately high." USEPA, Toolkit for Assessing Potential Allegations of Environmental Injustice ("EJ Toolkit"), 2004, p. 20. The EJ Toolkit serves as a reference guide to assist Agency personnel in assessing potential allegations of environmental injustice and to provide a framework for understanding national policy on environmental justice. http://www.epa.gov/compliance/resources/policies/ej/ej-toolkit.pdf

[3] An indicator can show an "adverse" effect, for example, if exposures are above chemical-specific environmental quality benchmarks for environmental media (e.g. water quality criteria) values for those contaminants. EJ Toolkit, p. 68.

[4] EJ Toolkit, page 24.

and social. It also provides a list of potential EJ indicators in each category. Each category of indicators serves a different purpose:

The **environmental indicators** provide data about the physical attributes of a community, including potential sources of environmental stressors, the relative levels of stressors to which community residents are being exposed, and adverse impacts that may have resulted. The environmental indicators also assist US EPA in evaluating the potential for disproportionately high and adverse environmental impacts on the community.

The **health indicators** provide information on the general health of the community's residents and their ability to cope with environmental stresses. It is usually not possible to conclusively demonstrate the existence or cause of increased incidences of diseases is related to exposure to specific contaminants.[5]

The **social indicators** reveal trends about the general socio-demographic aspects of the community. Social indicators also provide information on the ability of the community to meaningfully participate in the decision-making process.

The **economic indicators** reveal trends about the community's economic well-being. Assessing income levels is important to an EJ Assessment because low-income populations may be more vulnerable than the general population to adverse environmental risks and impacts (e.g., because of income-based health disparities).

D. Screening Environmental Justice Assessment Results

The EJ Toolkit recommends conducting EJ Assessments in a tiered approach, where a Screening Level Evaluation ("EJ Screen") is completed first. If the EJ Screen indicates a possible EJ concern for which US EPA could be of assistance, a more Refined EJ Assessment should be conducted. Based on the results of the EJ Screen and consistent with the EJ Toolkit, US EPA decided to conduct a more Refined EJ Assessment to better understand the community's economic, social, environmental, and health level status or well-being. Consistent with the EJ Toolkit, as an initial screening, US EPA used the Environmental Justice Geographic Assessment Tool (EJGAT)[6] to conduct an EJ Screen for the community within 5 miles of the Kettleman Hills Facility. This EJ Screen (see Appendix C) showed that the Kettleman community is an area of potential EJ concern because the following four screening level indicators exceeded threshold values (State averages): race distribution, ability to speak English, poverty level, and hazardous waste sites.

E. Refined Environmental Justice Assessment

According to the EJ Toolkit, the purpose of a Refined EJ Assessment is "to determine: (1) whether adverse impacts or effects exist and (2) whether there are disproportionately high adverse impacts or effects (environmental injustice)." A Refined EJ Assessment should determine appropriate US EPA action" and its decision should be "based on detailed, quantitative information."[7] For this Refined EJ Assessment, US EPA selected the final list of EJ indicators based first on community concerns, with additions later based on further research.

[5] EJ Toolkit, page 41.

[6] The Environmental Justice Geographic Assessment Tool (EJGAT) is a web-based GIS tool that provides information relevant to assessing adverse health or environmental impacts, aggregate or cumulative impacts, unique exposure pathways, vulnerable or susceptible populations, or lack of capacity to participate in decision making process among other conditions. Available at http://www.epa.gov/compliance/environmentaljustice/assessment.html

[7] EJ Toolkit, p. 22.

F. Overview/Summary of Legal Authorities and Policies Related To Environmental Justice

Executive Order 12898

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations" ("Executive Order"), establishes the Executive Branch's policy on EJ. It provides that "[t]o the greatest extent practicable and permitted by law . . . each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."[8] The Executive Order sets out national policy for the exercise of executive powers by Federal agencies. The Executive Order is not an independent source of authority; it directs agencies to implement its provisions "consistent with, and to the extent permitted by, existing law."[9]

By memoranda dated August 9, 2001, and November 4, 2005, US EPA reaffirmed the Agency's commitment to EJ. US EPA defines EJ as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies. Meaningful involvement means that: (1) people have an opportunity to participate in decisions about activities that may affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) their concerns will be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those potentially affected.

The Executive Order and the Administrator's memoranda do not give the Agency additional authority to address disproportionately high and adverse effects. Instead, they rely on existing statutory and regulatory provisions to further the goals of EJ.[10] Further, in nearly every case where US EPA finds potential disproportionately high and adverse effect, US EPA's response should at least include increased public participation.

Relationship between Environmental Justice and Title VI

In December, 1994, residents of Kettleman City, Buttonwillow and Westmoreland, California, filed an administrative complaint with US EPA under Title VI of the Civil Rights Act of 1964 against Kings County, the State of California Department of Toxic Substances Control (DTSC), and others alleging that the respondents had taken actions that had the effect of discriminating against them. US EPA has not yet made a decision about this Title VI complaint.

The goal of Title VI, which is a tool for promoting EJ, is to help ensure that communities are treated equally. While Title VI complaints and actions under the Executive Order governing EJ can be used to address environmental injustice in communities, there are several important differences. EJ, as set forth in the 1994 Executive Order, directs federal agencies to use, to the greatest extent practicable and permitted by law, their resources and authorities to identify and address, as appropriate, disproportionately high and adverse human health and environmental effects on minority or low-income populations. In contrast, Title VI refers to a section of the Civil Rights Act and applies to actions of recipients of federal money, such as States and local governments. Specifically, Title VI prohibits recipients of federal money from discriminating against persons on the basis of color, race, or national origin. Title VI prohibits intentional discrimination, and US EPA's Title VI regulations prohibit both intentional and unintentional discrimination. Unintentional discrimination may be demonstrated if it can be shown that a recipient administers its programs in a way that results in a discriminatory effect.

[8] Executive Order, Section 1-101.
[9] Executive Order, Section 6-608.
[10] See EPA Toolkit for Assessing Potential Allegations of Environmental Injustice, pages 11-13.

As mentioned above, residents living near KHF filed a complaint under Title VI of the Civil Rights Act against a number of recipients of Federal funding, such as Kings County and the California State DTSC. Unlike the Executive Order, Title VI does not apply to low-income populations. Accordingly, a low-income community may not file a complaint alleging discrimination under Title VI unless they are also members of a protected class of persons under Title VI. In addition, a recipient's obligation under Title VI is layered upon its separate obligations under the federal or state environmental laws governing its environmental regulatory program. Therefore, unlike the Executive Order, which is to be implemented by federal agencies in a manner consistent with existing law, Title VI imposes a separate legal responsibility on recipients as a condition of receiving federal funding. Hence, this Draft EJ Assessment under the Executive Order should not be interpreted as a decision about whether or not recipients named in the above-mentioned complaint have complied with the requirements under Title VI.

G. How the EJ Assessment Can Affect the Permit Process

The Executive Order and the Administrator's memoranda do not give US EPA any additional authority to address disproportionately high and adverse effects. Instead, they rely on existing statutory and regulatory provisions to further the goals of EJ.

Under TSCA and its implementing regulation, US EPA may have grounds to deny a permit if the applicant does not demonstrate that four criteria (found at 40 CFR761.77 (b)) have been met. Appendix B shows these four criteria in the section of the Code of Federal Regulations dealing with a PCB coordinated approval. US EPA has reviewed the application for the KHF facility and determined that KHF has met the four criteria in 40 CFR761.77 (b). More information on this determination is in the information repository.

US EPA TSCA regulations 40 CFR 761.77 (b) allow US EPA to add permit conditions necessary to ensure that the operation of the PCB storage or disposal facility does not "pose an unreasonable risk of injury to health or the environment." Using this provision, US EPA can include permit conditions necessary to mitigate or reduce actual or potential adverse health effects from the facility on nearby communities.

This Draft EJ Assessment highlighted areas for evaluation and consideration in developing the proposed permit conditions and public participation approaches to address community concerns related to the continued storage and disposal of PCBs at KHF.

II. COMMUNITY PROFILE AND SOCIAL INDICATORS

Because community residents and others have raised EJ concerns in the past, US EPA started with a thorough review of community concerns to help guide US EPA's evaluation of potential EJ issues in the nearby communities. Then this Draft EJ Assessment examined a series of social indicators. Consistent with the EJ Toolkit, the social indicators reveal trends about the general socio-demographic aspects of the community. Social indicators also provide information on the ability of the community to meaningfully participate in the decision-making process. US EPA relied on 2000 U.S. Census data to assess the demographics of the communities near the Kettleman Hills Facility (KHF).[11]

A. Community Concerns

For this Draft EJ Assessment US EPA reviewed the following records (from 1997 to the present) in order to capture the concerns of the residents of Kettleman City and Avenal:

- Public meeting notes and transcripts – US EPA meeting held on December 7, 1999, and California Department of Toxic Substances Control (DTSC) meeting held October 9, 2001
- DTSC's public participation plans
- Notes from various US EPA and DTSC discussions with community members
- California Governor's Office of Planning and Research and Kings County public meetings held on June 14, 2005, and October 19, 2005

From these documents, the following is a summary list of concerns raised by residents and the public:

Air quality

- PCB volatilization of unclosed units
- Air measurements for PCBs and potential health impacts
- Poor air quality in the community
- Need air monitoring in the community
- No clear direction on whom to call with odor problems and other concerns
- Concern that the community is exposed to chemicals from KHF when a dust storm or heavy fog could carry the chemicals from the stabilization ponds
- Concern that the air toxics from the facility will affect surface water supplies

Emergencies/spills/accidents related to KHF

- Community does not have access to disaster plan (for trucks and facility), including terrorist attacks
- Concerns about what would happen at the facility during a natural disaster, such as an earthquake
- Potential for truck accidents and the impacts on the local community
- Concern over accident notification. Residents want to hear about accidents that might affect them immediately and know how the accident was handled

KHF compliance record and distrust of CWM and regulatory agencies

- Landfill unit B16 exceeding capacity
- High number of remedial work orders
- Questions about how US EPA makes decisions about enforcement actions
- Lack of trust between the community and local, state and federal agencies
- Lack of trust between the community and CWM

Closure plans for KHF

- Concern that the closure plans for KHF are not adequate, and the facility will not be properly maintained after the landfills are full and the on-site staff has left

[11] Available on the internet at http://factfinder.census.gov/

Public Participation in decisions related to KHF

- Ability to influence US EPA and California Department of Toxic Substances Control (DTSC) and affect permit decisions
- Concerns that the wording of public notice for the permit does not encourage public participation
- Access to information though repositories within the community are not available during convenient hours
- Spanish translations of written materials is needed at public meetings
- Mailings to the community need to be bilingual and easily understandable

Health concerns

- The high number of cases of childhood asthma in Kettleman City
- The high number of cancer deaths in Kettleman City

Concerns related to activities outside the boundaries/scope of KHF activities

- Concern about benzene concentrations in the drinking water in 1993-1995 and the length of time to address them
- Residents have been sprayed by crop dusters in the past, and they do not know whom to call for complaints
- Residents lack access to health care
- Concern that the value of their property has gone down because of KHF

US EPA acknowledges that some of these concerns were collected from documents that are several years old.

B. Population

KHF is located within an industrially and commercially zoned area. The area immediately surrounding KHF is open land used for cattle grazing and, in the past, for oil exploration. The nearest communities are located in Kettleman City, approximately 3.5 miles away, and in the City of Avenal, approximately 6.5 miles away. In 2000, Kettleman City had a population of 1,499, and Avenal had a population of 14,674.

C. Minority Population[12, 13]

Given that one of the goals of Executive Order 12898 is to protect minority populations from disproportionate environmental stressors, it is important to determine the race and ethnic composition of the community.[14]

94.6% of the population of Kettleman City is minority and 80.1% of the population of Avenal is minority. Both these percentages are well above the percent minority for Kings County and the State of California, which are 58.4% and 53.3% respectively.

The largest minority group around KHF is Hispanic. Individuals of Hispanic ethnicity account for 92.7% of the population of Kettleman City, and 65.9% of Avenal. Both of these percentages are well above the percentages for Kings County and the State of California for Hispanic populations. Avenal also has 12.6% African American population.

[12] The term minority means a person, as defined by the US Bureau of Census, who is a: (1) Black American (a person having origins in any of the black racial groups of Africa); (2) Hispanic person (a person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race); (3) Asian American or Pacific Islander (a person having origins in any of the original peoples of the Far East, Southeast Asia, and the Indian subcontinent, or the Pacific Islands); or (4) American Indian or Alaskan Native (a person having origins in any of the original people of the North America and maintains cultural identification through tribal affiliation or community recognition.)

[13] Consistent with US EPA's policy, race was used for analysis only and was not used as a basis for any actions in this EJ Assessment.

[14] EJ Toolkit, page 43.

Table II-A: Minority Population				
	Kettleman City	Avenal	Kings County	California
Minority	94.6%	80.1%	58.4%	53.3%
Hispanic	92.7%	65.9%	43.6%	32.4%

D. Poverty

The Census 2000 data also reports poverty status. Individuals below the poverty level constitute 43.7% of the population of Kettleman City and 30.7% of the population of the Avenal. Both of these percentages exceed the percentages for Kings County and California. Information about determining poverty level is on the US Census website.[15] Note that poverty estimates have a higher degree of uncertainty than other types of data, like minority status, because fewer people fill out income information in the Census.

The median family income in Kettleman City is $21,955. The median family income in Avenal is $28,019. The values are significantly below the median family income values for Kings County and the State of California.

Table II-B: Poverty and Income				
	Kettleman City	Avenal	Kings County	California
Percent of individuals below the poverty level	43.7%	30.7%	19.5%	14.2%
Median family income	$21,955	$28,019	$38,111	$53,025

E. Languages

The 2000 Census includes two measures that look at language ability: (1) Percent of the population that speaks English less than "very well" and (2) Percent of the population that speak a language other than English at home. For both measures, the percent of the population in Kettleman City and Avenal are significantly higher than the percent of the population for Kings County and the State of

Table II-C: Language Ability				
	Kettleman City	Avenal	Kings County	California
Speak English less than "very well"	61.4%	32.7%	16.8%	20%
Speak language other than English at home	88.5%	58.7%	36.7%	39.5 %

F. Educational Attainment

The 2000 Census includes a measure that looks at the population 25 and older and evaluates the percent of the population with a high school education or higher. For Kettleman City and Avenal, this percentage is significantly lower than the percentages for Kings County and the State of California.

Table II-D: Educational Attainment				
	Kettleman City	Avenal	Kings County	California
Population 25 and older, high school graduate or higher	18.8%	56.1%	68.8%	76.8 %

[15] http://www.census.gov/prod/2003pubs/c2kbr-19.pdf

G. Conclusions about Social and Economic Indicators

Analysis of the social and economic indicators shows that Kettleman City and Avenal are low-income and minority communities. Many of the community residents speak Spanish. Therefore, we have prepared more of the presentation and materials in Spanish. In addition, EPA is putting information in more repositories and more newspapers.

III. KETTLEMAN HILLS FACILITY (KHF) INFORMATION

This section introduces the facility itself and examines potential environmental and health impacts from the facility on Kettleman City and Avenal. The section following this one will discuss the broader environmental and health context in these communities beyond the facility itself.

A. Facility Location

KHF is located in Kings County that is in an area of California known as the San Joaquin Valley. The San Joaquin Valley, at the southern end of the Central Valley, contains Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties. The San Joaquin Valley is surrounded on three sides by mountains: the Sierras to the east, the Tehachappi Mountains in the south, and the Central Coast Range to the west. The San Joaquin Valley is the most prolific farm belt in the United States. In addition to the most intensive and diverse agricultural industry in the nation, the San Joaquin Valley has one of the highest population growth rates in the state.[16]

Kings County is in the central portion of the San Joaquin Valley. Kings County is one of the smaller counties in the valley, tucked between Fresno, Tulare, and Kern counties, with a small western border along the Central Coast Range portion of Monterey County. The county's leading industry is agriculture. The dominant agricultural products are cotton/cottonseed and milk, followed distantly by cattle and calves, turkeys, grapes, peaches, and other products. Kings County's population of 118,900 is distributed mostly among the cities in the eastern side of the county: Hanford (38,450), Lemoore (16,350), Corcoran (14,600). The western side of the county has the smaller cities of Avenal (14,674) and Kettleman City (1,499). 37,050 people live in the unincorporated areas that comprise most of the county.

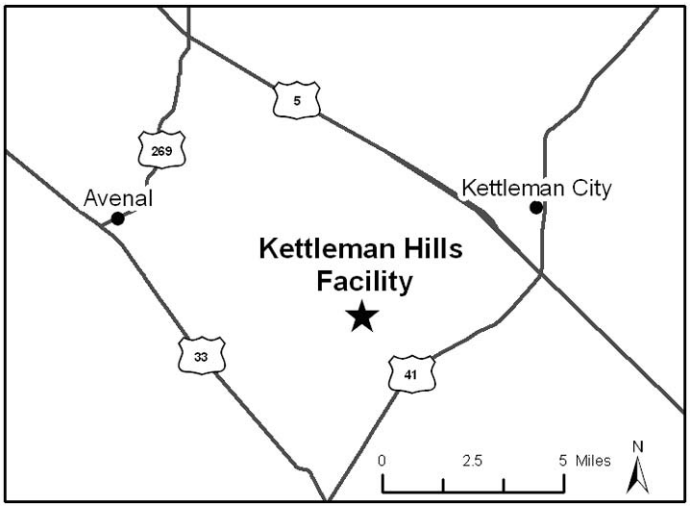
KHF is located in an area characterized by rolling hills that are sparsely covered by annual grasses and low shrubs. The California Aqueduct is located approximately 3 miles east of KHF. The aqueduct is concrete-lined, thereby isolating the aqueduct water from the underlying groundwater basin that flows through the region. Due to the limited rainfall in the area and limited runoff from KHF, surface flow from the vicinity of the KHF is unlikely to reach the vicinity of the aqueduct.

The prevailing winds are from the north/northwest approximately 85% of the time, primarily because of the northwest-to-southeast orientation of the Kettleman Hills and dominance of the Eastern Pacific high pressure ridge, resulting in wind flow from the north/northwest. Most of the time, the wind does not blow towards Kettleman City.

[16] California Agriculture: Resource Directory 2002. http://www.cdfa.ca.gov/card/card_new02.htm

B. Facility Description

KHF is a commercial, hazardous waste treatment, storage, and disposal facility. The facility address is 35251 Old Skyline Road, Kettleman City, California. It is located approximately 3.5 miles southwest of Kettleman City and 6.5 miles southeast of the City of Avenal.



C. Facility History

Waste disposal activities began at the facility in June, 1975, when Kings County issued a conditional use permit (CUP) to McKay Trucking for a liquid waste disposal site in the Kettleman Hills. This action permitted the land spreading of wastes derived from oil production activities. In March, 1977, the CUP was expanded to include evaporation ponds and certain Group I industrial wastes (organic solvents, paints, polymer resins, fertilizer, and soil amendment residues). In January, 1978, the Regional Water Quality Control Board issued permits allowing containerized hazardous materials to be buried on site.

In February, 1979, the facility was issued a new CUP that allowed disposal of an expanded class (Class I) waste stream. The area of the operating facility expanded from 86 to 211 acres. In April, 1979, Chemical Waste Management, Inc., acquired ownership of the facility. Between June, 1982, and June, 1984, KHF applied for and received a variety of permits, including CUP's for PCB storage and burial as well as waste treatment and processing.

The facility currently contains 1,600 contiguous acres; 499 acres have been approved for hazardous waste activity by the US EPA, California DTSC and Kings County. KHF accepts approximately 250-330 thousand tons of waste per year.

D. What Agencies are Involved?

Many different agencies have involvement in environmental activities at the Kettleman Hills Facility. Table III-A below lists these agencies and their regulatory oversight authorities.

TABLE III-A: Regulatory Profile for KHF

AGENCY	OVERSIGHT RESPONSIBILITY	DESCRIPTION
Federal		
US Environmental Protection Agency	PCB Storage and Disposal Comprehensive	Disposal of PCBs in two landfill units and operation of one storage unit.
US Environmental Protection Agency	Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) Off-site rule	Wastes generated by Superfund remediation activities must be disposed of at a facility operating in compliance with federal laws. US EPA evaluates KHF to determine if it is acceptable for KHF to receive CERCLA wastes.
US Fish and Wildlife	Endangered species	May be involved in consideration of impacts on listed species.
State		
California Department of Toxic Substances Control	Hazardous Waste and PCB storage and disposal	Hazardous waste treatment, storage and disposal. Hazardous waste disposal in two landfill units. Operation of three surface impoundments. PCB disposal.
California Regional Water Quality Control Board	Wastewater Discharge Requirements	Regulates effluent discharges from both open and closed landfill units. Oversees groundwater monitoring.
California Integrated Waste Management Board	NNISW (nonhazardous, nonputrescible, industrial solid waste) Registration Permits	Registration permit covers nonhazardous, nonputrescible, industrial solid waste.
California Governor's Office of Planning and Research	Coordination of Land Use and Hazardous Waste permits under Tanner Act	Facilitates additional public meetings for hazardous waste landfill land use and hazardous waste permits.
California Department of Fish and Game	Endangered Species	Issues permits for activities that will result in a taking of threatened or endangered species. Requires Habitat Conservation Plan.
Local		
San Joaquin Valley Unified Air Pollution Control District	Air Pollution Control Permits	Sets standards for air emissions from portable water pump, generators, air compressors, landfill units, impoundments, stabilization units, underground storage tanks, and evaporation ponds.
Kings County Department of Public Health, Division of Environmental Health Services	Emergency Planning and Community Right-to-Know (EPCRA) Act, Sections 311 and 312	KHF is required under the EPCRA to report hazardous chemicals stored and spilled to Kings County if the releases exceed threshold quantities. Kings County makes this information available to the public.
Kings County Department of Public Health	Underground storage tanks	Regulates the underground storage tanks.
Kings County Planning Department	Land Use Permits and Approvals	Various conditional use permits, administrative approvals, etc.

E. PCB Operations at Kettleman Hills Facility

PCB waste received at KHF has a PCB concentration that ranges from 1 parts per million (ppm) to 1,000,000 ppm and mostly has a PCB concentration of less than 500 ppm. The PCB waste received at KHF undergoes visual inspection to ensure manifest information is correct. Once received, the facility sends equipment and containers with liquids of varying PCB concentrations to the PCB storage unit for draining and/or flushing. It then sends such PCB liquids off-site for incineration. PCB waste that does not contain PCB liquids is placed in landfill B-18 for disposal. Landfill B-18 is the only unit where PCB waste disposal occurs at KHF. KHF tracks the location of PCB waste in landfill B-18 according to the manifest number and sends a certificate of disposal to the waste generator. An annual record and document log tracks PCB waste disposal activities.

Most of the PCB waste received at KHF is contaminated soil and concrete. In 2004, KHF disposed of more than 10 million kilograms of PCB waste, consisting primarily of contaminated soil and concrete, as well as 600,000 kilograms of empty containers and drained transformers that had been contaminated with PCB liquids. US EPA has examined the 1998 revised PCB Waste Analysis Plan and found it conforms with TSCA requirements.

TSCA limits mixing of PCB waste with radioactive, ignitable, and other materials that could cause an unreasonable risk to human health or the environment. The California Hazardous Waste Control Law imposes additional restrictions.

The waste put into the evaporation ponds must comply with the TSCA F039 Treatment Standards for Hazardous Waste in 40 CFR 268.40, which allows a PCB concentration of up to 0.10 mg/cubic liter in waste.

F. Traffic Conditions Near Kettleman Hills Facility

Each business day, approximately 250 trucks containing waste travel to KHF from various directions. Of these 250 trucks, up to 86 truck round-trips per day (approximately 34%) transport waste through Kettleman City on SR-41.[17] Of the 250 trucks, approximately 180 trucks contain hazardous waste, and 70 contain municipal wastes. Of the approximately 180 trucks per day that contain hazardous waste, approximately 10 of these trucks contain PCB wastes. In addition, during the night trucks line up outside the facility along the shoulder of SR-41.

SR-41 through Kettleman City is classified as a "Principal Arterial."[18] Traffic engineers define a "Principal Arterial" as a highway that serves main travel corridors. This class of street serves significant intra area travel (i.e., travel within the area) and important intra urban and intercity bus services (i.e., bus services within a city and among different cities). Though a Principal Arterial roadway may provide some access to abutting land, its principal function is to carry traffic that passes through an area.

As part of the Kettleman Hills Facility B-19 Bioreactor Supplemental Environmental Impact Report (SEIR), a Traffic Impact Study was completed in June, 2004. This traffic study conducted a traffic count on November 14, 2003, for the segment of road on SR-41 from Quail Avenue to Interstate 5 (which passes through Kettleman City). The traffic counts were collected using either 24 hour or seven day hose counts. Based on this traffic count, the segment was classified as "Level of Service C." "Level of Service" is a qualitative rating of the effectiveness of a roadway in serving traffic, in terms of operating conditions such as traffic flow, using an alphabetical scale from A to F with A being the best (free flow) and F being the worst (stopped traffic).

[17] Draft Subsequent Environmental Impact Report, B-19 Landfill Bioreactor Project, Kettleman Hills Facility, Chemical Waste Management. Prepared by Kings County Planning Agency, Hanford, California, November 2004. KHF plans to build a bioreactor unit on top of the existing municipal waste landfill, and this SEIR was prepared to evaluate the potential environmental impacts of this project.

[18] Kettleman Hills Facility B-19 Bioreactor Subsequent Environmental Impact Report, Figure 3.6-1

The study projects that during Friday evening Peak traffic hour through Kettleman City for 2007, including the increased traffic due to the Bioreactor project, 460 vehicles travel in one direction and 371 in the other. 17% of the traffic is trucks or buses. According to the Traffic Impact Study, 24% of the trucks (86 roundtrips per day) traveling to Kettleman Hills Facility pass through Kettleman City.

The major transportation arteries leading to the KHF facility are I-5 and SR-41. The types of trucks that typically arrive at the facility include tank trucks (bulk liquid and pumpable wastes), flatbed trailers (containerized wastes), and end dump trucks (sludge and solid wastes). The site entrance is located on SR-41 approximately 2.6 miles southwest from I-5. At the entrance, SR-41 is a relatively level two-lane roadway (with three-foot paved shoulders) containing a double center line. SR-41 has been widened at the site entrance to provide a separate turning lane for each direction of traffic entering the site access road. The site access driveway is a two-lane paved roadway that meets SR-41 at an approximate right angle.

The Kings County Association of Governments reviewed the traffic conditions along those stretches of SR-41. The review found that SR-41 1) deteriorated at an accelerated rate due to the high percentage of trucks and farm-related equipment that used it, 2) did not have an adequate shoulder in places, and 3) experienced congestion at the I-5 interchange at Kettleman City. In response to these problems, a few years ago, the road width and grade was improved to handle the congestion at the I-5 interchange. Additional plans to widen SR-41 both along Kettleman City and for stretches between I-5 and the facility are currently unfunded. The review predicted that traffic will increase by at least 50% along those stretches of SF-41 by 2015. [19]

US EPA consulted with the local Highway Patrol office about traffic accidents on the roads nearby KHF. The Highway Patrol office checked its records from January 1, 2002, to December 31, 2004, and found no accidents involving trucks on the roads in the immediate vicinity of KHF.

G. KHF Inspection and Compliance History

This section provides details on the inspection and compliance history of KHF. For a comparison of the inspection and compliance history for KHF with other PCB facilities in the US, see Section IV.

In July, 1984, US EPA issued a complaint to Chemical Waste Management, citing the company with four violations of RCRA and assessing a fine of $108,250. US EPA later amended this complaint in June, 1985, by citing 33 additional RCRA violations and assessing additional monetary penalties of $5,725,500. US EPA also issued a TSCA complaint at the same time. The RCRA and TSCA violations included the following: (1) failure to conduct proper groundwater monitoring, (2) site modifications without State approval, (3) failure to maintain proper inspection and operating records, (4) placement of incompatible wastes in surface impoundments, and (5) disposal of solid and liquid PCB's in a RCRA landfill cell not permitted to accept PCB wastes. US EPA and the California Department of Health Services conducted negotiations with KHF. The settlement negotiations resulted in a settlement of approximately $4,000,000.

Since the 1985 settlement, the KHF has been inspected on a regular basis by US EPA, the State of California, the Air District, and Kings County. US EPA inspects the TSCA activities at KHF approximately once every two years. In the last 17 years, US EPA has conducted TSCA inspections 8 times. The State of California has inspected KHF facility 32 times over the past 18 years. Inspectors found KHF out of compliance multiple times in the past 18 years, but it has shown no major violations since 2000. The San Joaquin Valley Unified Air Pollution Control District ("Air District") also inspects KHF approximately once per year. An Air District inspection in 2004 found a violation, and KHF was fined $600 for the violation. Kings County inspects the solid waste landfill at KHF on a monthly basis and has not identified any compliance concerns. US EPA's RCRA office also conducts periodic inspections focusing on the solid waste landfill portion of KHF, and over the last five years this office has not found

[19] 1999 Kings County Regional Transportation Plan, page A-9

any major violations. During these inspections, US EPA audits overall compliance of KHF with local, state, and federal environmental requirements, taking into consideration the results of inspections by other agencies such as the County, the Air District, and the State. This purpose of US EPA's audit is to evaluate overall facility compliance to determine continuing acceptability to receive Superfund waste under the CERCLA off site rule.

On May 5, 2005, US EPA reached a $47,500 settlement with Chemical Waste Management regarding its alleged failure to conduct monthly leachate monitoring at one of four PCB disposal units at KHF for over three years. In December, 2003, the facility audited its compliance activities while preparing to reopen one of its PCB disposal units in preparation for closure and discovered the alleged violations. The company resumed monitoring in December, 2003. The company reported the alleged violations to the US EPA in February, 2004. The settlement includes a $10,000 fine and $37,500 to purchase emergency response equipment for the Kings County Environmental Health Services.

H. Historic Releases of PCBs

A review of remedial work orders provided by KHF in June, 1999, indicated that at times small spills occurred during draining and flushing activities in the PCB storage unit. An October, 2001, inspection of the facility by US EPA found that the facility replaced the pump responsible for the spills and, as a result, such spills had ceased. These spills occurred within the PCB storage area, and the spills were double-contained (occurred in small sorbent-containing box on top of epoxy-sealed concrete within the bermed area). The response to the spills followed the TSCA requirements and no environmental harm occurred.

On January 18, 2001, weather conditions affected the safe entry into landfill unit B-18. B-18 became unsafe and more than 120 loaded trucks were stuck on-site. To expedite unloading of the trucks and disposal of the waste, the waste was transferred from the trucks into the stabilization unit. Four of the trucks contained waste with PCB concentrations greater than 50 ppm. The placement of the PCB waste in the stabilization unit not approved for TSCA waste constituted a PCB spill. No environmental harms or releases occurred as a result of this incident.

I. Potential For Releases of PCBs

The KHF facility has liquid PCBs in the PCB storage unit and non-liquid PCBs in the landfills. PCB spills in the PCB storage unit are contained by the concrete, asphalt, or the first few inches of soil. The likelihood of exposure due to releases from these facilities is made more remote by the fact KHF has contingency plans to respond to spills immediately.

The facility has a surrounding fence, 24-hour-a-day and seven-day-a-week on-site security and a large buffer zone surrounding the core active site. KHF has established a contingency plan to address emergencies, has designated an emergency coordinator to oversee emergency responses at all times, and has trained personnel in how to use emergency and personal protective equipment available on-site. When spills occur, the facility follows a spill prevention control and countermeasure plan. The units handling waste have been designed to ensure the operation of the unit does not release materials that pose an unreasonable risk to human health or the environment.

J. Air Monitoring at KHF

Community residents expressed the greatest concerns about air quality impacts of KHF. This part of the Draft EJ Assessment discusses analysis of potential air pollution related to the facility itself. The region, however, has air quality concerns from sources other than the facility. Section VI gives this context.

Air pollution can come in many different forms (e.g. air toxics and criteria air pollutants such as ozone and particulate matter) and can come from many sources (e.g. idling trucks, flaring from the landfill, agricultural activities, dust from traffic, and surface emissions from the landfill). US EPA has approved

a number of different types of models to predict the likely exposure of residents to different types of air pollution from different sources. The sections below will discuss different sources and types of pollution separately.

The State DTSC required KHF to conduct air sampling as part of its permit. The KHF Air Monitoring Program consisted of five air monitoring stations: three stations located at KHF and one station each located in Kettleman City and Avenal. Beginning in April, 1986, these five stations sampled outside air around-the-clock, 365 days per year, for seven volatile organic gases: Benzene, Chloroform, Ethylene dichloride, Methyl chloroform, Methylene chloride, Trichloroethylene, and Total hydrocarbons. Through December, 1990, monitors measured occasional concentrations above detection limits. However the levels were at or below the levels measured in other stations in San Joaquin Valley. From January, 1991, through July, 1995, no samples showed any concentrations above detection limits.[20]

In 1995, with oversight by DTSC, KHF conducted an Air Study to evaluate air emissions from KHF. For this study, KHF collected samples downwind of every emission point at the facility. Based on the sampling data, air dispersion modeling, and analysis of predicted property line ambient air concentrations, the study found no significant risks to nearby communities. Particulate monitoring from this study showed no surface soils blow toward residents. [21]

KHF submitted a workplan to DTSC dated February, 2006, for resuming the air-monitoring program as required by the RCRA hazardous waste permit. DTSC approved the workplan on March 29, 2006. The new program will consist of air monitoring downwind of emission points and fenceline monitoring at two downwind locations and one upwind location. If concentrations of concern are detected in these samples, then collection of air samples in the communities of Avenal and Kettleman City may be required. KHF will also collect meteorological data such as wind speed, wind direction, barometric pressure and humidity. The samples will be analyzed for volatile organics, metals, and particulate matter. Samples will be collected every 12 days, on the same schedule as the Air Resources Board monitors. The samples will also be analyzed for PCBs.

The notes, dated June 14, 2005, from the June 9, 2005, public meeting hosted by the California Office of Planning and Research states “Chem Waste and DTSC will analyze the potential effect of fog or wind to transport contaminants from the evaporation ponds to outside the perimeter. They will consider the need for ambient air monitoring.”

KHF has conducted several PCB air monitoring events for KHF workers in the PCB Building, PCB Wet Laboratory, Bulk/Receiving Area, B-18 Landfill, and B-19 Landfill. These samples were analyzed for PCBs, and all results were below detection limits.[22] US EPA did not conduct oversight of these PCB air sampling efforts because TSCA does not specifically require air sampling and the current US EPA PCB permit does not require air sampling.

Finally, regarding odor, community residents asked to know where to report odor complaints. In Kings County, residents can call the San Joaquin Valley Air Pollution Control District at 559-230-6000.

K. Air Quality Impacts to Kettleman City Residents from Trucks Traveling to KHF

The 1997 SEIR for the Municipal Solid Waste Disposal Project at KHF included a Kettleman City Traffic Emissions Analysis. This analysis examined the impacts of emissions from trucks traveling through Kettleman City on Kettleman City residents. The analysis concluded that for CO and NO2, the emissions are insignificant. For PM10, the KHF related traffic accounts for less than 6% of the emissions from traffic in general. The 2004 KHF SEIR for Landfill B-17 did not include an analysis of air quality impacts to Kettleman City residents from trucks traveling through Kettleman City to KHF.

[20] January 10, 2000 letter from Chemical Waste Management to EPA
[21] 1994 Topographic, Meteorological and Airborne Contaminant Characterization at Kettleman Hills Facility, Volume 1, April 1995
[22] January 10, 2000 letter from Chemical Waste Management to US EPA

L. Modeled Contribution to Ambient Diesel Particulate Matter of Idling Trucks

As shown through the NATA assessment (See Section VI), Kettleman City and Avenal are in the categories of communities expected to have the lowest exposure to diesel. However, the NATA is a national model that cannot identify potential health concerns in the immediate vicinity of any specific source, so local high-impact areas in a community are possible. The community has expressed concern about the large number of trucks associated with the facility. To investigate one aspect of this concern, US EPA used a simple model to estimate the potential diesel particulate matter emissions from trucks idling overnight outside KHF. This model is called Atmospheric Dispersion Modeling System (ADMS)-Screen 3, and it models dispersion from a single stack to calculate ground level concentrations. The model predicts how chemical concentration changes depending on distance from the location of idling trucks. The model assumes a worst case weather scenario.

The model assumes 30 idling trucks in the parking area at junction of Old Skyline Road and the service road that enters the facility. This location is approximately three miles from Kettleman City, where the nearest home is located. At a distance of three miles from the location of parked idling trucks, the model predicts that the maximum one-hour concentration is 0.177 ug/m^3. This value is multiplied by 0.08 to derive an annual concentration value of 0.0142 ug/m^3. This new potential exposure concentration would be added to the annual exposure already modeled to arrive at a higher new estimate of exposure that takes into account the extra contribution from the idling trucks.

To see how much difference this newly modeled exposure amount of 0.0142 ug/m^3 would make, it should be compared to the mapped modeled annual ambient diesel particulate matter concentrations. The modeled ambient diesel concentration for the census tract that contains Kettleman City is 0.1742 ug/m^3. Therefore, adding the newly modeled likely exposure from idling trucks would increase the modeled level of outdoor exposure to diesel concentrations by 8%. In other words, without the idling trucks, models predict that residents of Kettleman City would face exposure of 0.1742 ug/m^3 of outdoor diesel particulate matter. The new model predicts that idling trucks should make these concentrations 8% higher.

M. Kettleman Hills Facility Air Quality Risk Assessment

The KHF B-17 Landfill Project Draft Supplemental Environmental Impact Report (SEIR) used a model to determine the impact of the proposed project and existing landfills at KHF on air quality. Ground level concentrations resulting from emissions from the landfill surface, the flare, and mobile sources were calculated using the Industrial Source Complex Short-Term Model Version 3 (ISCST3), which is a US EPA-approved model. The parameters and location of each emission source were included in the model. The San Joaquin Valley Pollution Control District provided data from Kettleman City for use in the model.

Based on comments provided by the San Joaquin Valley Air Pollution Control District on the Draft SEIR for the KHF B-17 Landfill Disposal Project, the air quality analysis includes a multi-pathway health risk assessment.[23]

Table III-B: Multipathway Risk Assessment Results from Hazardous Waste and Municipal Waste Activities at Kettleman Hills Facility

	Maximum	2000 ft. from Fenceline	Nearest Residence	Kettleman City
Cancer Risk	2×10^{-5}	8×10^{-6}	7×10^{-7}	2×10^{-7}
Chronic Risk	1×10^{-1}	4×10^{-2}	2×10^{-3}	9×10^{-4}
Acute Risk	1×10^{-2}	1×10^{-2}	7×10^{-4}	4×10^{-4}

[23] Final SEIR B-17 Landfill Project, Kettleman Hills Facility, May 2006

Cancer risk is typically expressed in exponential form (i.e. 1 x 10^{-6}, meaning one in one million), which describes the increased possibility of an individual developing cancer from exposure to toxic materials. Calculations producing cancer risk numbers are complex and typically include a number of assumptions that tend to cause the final estimated risk number to be conservative. On average approximately one in three (or 3.3 X 10^{-1}, meaning 333,333 in a million) people will get cancer in their lifetimes.

The multi-pathway risk assessment predicts that the increased cancer risk resulting from emissions from the Kettleman Hills Facility is 2 x 10^{-7}, or 0.2 in a million. US EPA generally considers cancer risks less than one in one million (1 x 10^{-6}) to be acceptable in all cases, and cancer risks between one in one million (1 x 10^{-6}) and one hundred in one million (1 x 10^{-4}) to potentially be acceptable based on an assessment of the specific circumstances. Because the estimated increase in cancer risks in Kettleman City resulting from emissions from Kettleman Hills Facility are less one in a million (1 x 10^{-6}), the estimated cancer risk is considered acceptable.

Chronic and Acute non-cancer hazard indices estimate potential human health hazards from noncarcinogenic substances. For Chronic and Acute non-cancer hazard indices, values less than 1 are generally considered to be acceptable. If the value exceeds 1, toxic effects are possible. For Kettleman City, the estimated increased Chronic non-cancer hazard index resulting from emissions from the Kettleman Hills Facility is 9 x 10^{-4}, or 0.0009, and the estimated increased Acute non-cancer hazard resulting from emissions from the Kettleman Hills Facility index is 4 x 10^{-4}, or 0.0004.

In addition, in June 1996, the San Joaquin Valley Air Pollution Control District issued the California Air Toxics "Hot Spots" Act 1992 ranking for KHF. Under this program, the Air District considers potency (or strength), toxicity, and volume of hazardous material released from the facility and the distance from the facility to the nearest potential resident. According to the guidelines for this program, the Air District considers a facility with a score of less than 1 to be a "low priority facility." KHF received a score of 0.244.

N. Kettleman Hills Facility Impacts on Criteria Air Pollution

US EPA has set national air quality standards for six common pollutants (also referred to as "criteria" pollutants). These are ozone, particulate matter ("PM") less than 10 microns in diameter ("PM10") and less than 2.5 microns in diameter ("PM2.5"), Nitrogen Oxides (NOx), Sulfur Oxides (SOx), and Lead.

The KHF B-17 Landfill Project Draft SEIR analyzed the impacts of criteria pollutant emissions from activities associated with KHF's hazardous waste and municipal waste activities. The San Joaquin Valley faces regional level air pollution issues that come from many sources. The Draft SEIR concluded that because of the existing regional issues, KHF-related activities have a "cumulatively significant impact" for ozone, PM10 and PM2.5. These impacts are significant and unavoidable after even after implementation of mitigation measures.

When an agency, such as Kings County, decides to approve a project that will cause one or more significant environmental effects, the California Environmental Quality Act calls for the lead agency to prepare a "statement of overriding considerations," which expresses "the lead agency's views on the ultimate balancing of the merits of approving a project despite its environmental damage." These could include "competing public objectives (including environmental, legal, technical, social, and economic factors)."[24] Kings County approved a statement of overriding considerations on May 27, 2005.

Further analysis, detailed below, however, shows that any impacts are likely to be minor and largely regional rather than local. Modeling shows emissions from KHF are not likely to cause significant health impact on residents in Kettleman City or Avenal. Below are more details, first about PM and second about ozone and other compounds that contribute to ozone.

[24] http://ceres.ca.gov/ceqa/flowchart/la_soc.html

Regarding PM, air modeling of PM10 and PM2.5 provided to US EPA[25] showed that emissions from KHF activities do not contribute significantly to PM10 and PM2.5 concentrations in Kettleman City and Avenal. This study used a US EPA-approved model in a manner that US EPA felt was appropriate: it included a broad range of potential contributors to air pollution such as flaring and trucks. US EPA's evaluation of the modeling results concluded that communities in Kettleman City and Avenal would not suffer from adverse impacts resulting from the incremental PM10 and PM2.5 emissions from KHF.

Table III-C: PM10 Modeling Results

	National Standard	Background[26]	Kettleman City	Avenal
Annual	50 ug/m3	42 ug/m3	0.06 ug/m3	0.03 ug/m3
24-Hour	150 ug/m3	150 ug/m3	0.61 ug/m3	1.29 ug/m3

Table III-D: PM2.5 Modeling Results

	National Standard	Background	Kettleman City	Avenal
Annual	15 ug/m3	16 ug/m3	0.03 ug/m3	0.01 ug/m3
24-Hour	65 ug/m3	52 ug/m3	0.20 ug/m3	0.52 ug/m3

Ozone, the main ingredient of smog, presents a serious air quality problem in many parts of the United States. Even at low levels, ozone can cause a number of respiratory effects. Ozone is formed by a chemical reaction between volatile organic compounds (VOCs) and oxides of nitrogen (NOx) in the presence of sunlight.[27]

Because ozone is formed by a chemical reaction, ozone concentrations cannot be directly modeled. NOx concentrations, however, can be modeled and provide some indication of the potential impacts.

KHF emits a maximum of 252 lbs/day (46 tons per year) of volatile organic compounds (VOC)/ reactive organic gases (ROG) and 549 lbs/day of Nitrogen Oxides (NOx) (100 tons per year). Also, KHF emits 951 lbs/day (174 tons per year) of PM10.[28] According to the SEIR, NOx emissions from ongoing operations do not alone exceed the threshold, but adding periodic construction emissions, the largest source of NOx, causes exceedance.[29]

The San Joaquin Valley Air Pollution Control District's recommended thresholds of significant impact are as follows:

- Reactive Organic Gases 10 tons/year (55 pounds/ day)
- NOx 10 tons/year (55 lbs/day)

If calculated emissions exceed these thresholds, they are significant and require additional analysis. On the following page is a description of the analysis that KHF submitted.

[25] Letter from Paul Turek, Chemical Waste Management to Lily Lee, US EPA Region 9 dated July 27, 2006.
[26] Background values are measured in Corcoran for 2003 – 2005.
[27] For more general background about criteria air pollutants, see http://www.epa.gov/ebtpages/airairpocriteriaairpollutants.html
[28] Draft Subsequent Environmental Impact Report, B-19 Landfill Bioreactor Project, Kettleman Hills Facility, Chemical Waste Management, Prepared by Kings County Planning Agency, November 2004.
[29] KHF B-17 Landfill Project Draft SEIR, Appendix D: Air Quality Technical Analysis, November, 2005, p. 5-1.

Table III-E below shows the emissions from KHF in relation to the total emissions in Kings County.

Table III-E: KHF and Kings County Emissions in tons per year		
	KHF	**Kings County**[30]
VOCs/ROG	46	8,044
NOx	100	9,420
PM10	174	11,236

To determine the local (vs. regional) impact, KHF modeled NOx emissions rate to determine ground level concentrations at the facility's fenceline. Modeling shows that emissions from the Project do not exceed either the State or the Federal air quality standards for NOx at the property boundary combined with background NO2 concentrations.

Table III-F: Kettleman Hills Cumulative and B-17 Projects **ISCST3 Modeling Results – *NOx Concentrations* – Ongoing Operations Emission Scenarios**				
	B-17 Project Only		**Cumulative Project**	
Source	1-hour	Annual	1-Hour	Annual
Operations	63.38	2.61	137.73	5.41
Background	87.35	17.47	87.35	17.47
Total	150.73	20.08	225.08	22.88
California Ambient Air Quality Standard	470		470	
National Ambient Air Quality Standard		100		100

Note: All concentrations reported in micrograms per cubic meter (ug/m3)

Table III-G: Kettleman Hills Cumulative and B-17 Projects **ISCST3 Modeling Results – *NOx Concentrations* – Worst-Case Emission Scenarios**				
	B-17 Project Only		**Cumulative Project**	
Source	**1-hour**	**Annual**	**1-hour**	**Annual**
All	180.18	4.74	321.17	9.41
B-17 Construction	136.51	3.51	137.73	3.51
B-18 Construction	0	0	137.83	3.39
Construction	136.51	3.51	232.20	6.75
Operations	63.38	2.61	137.73	5.41
Background	87.35	17.47	87.35	17.47
Total	267.53	22.21	408.52	26.88
California Ambient Air Quality Standard	470		470	
National Ambient Air Quality Standard		100		100

[30] Kings County emission data was extracted from EPA's 1999 National Emissions Inventory, available at http://www.epa.gov/oar/data/

Therefore, modeling does not find that emissions from KHF activities contribute significantly to NOx concentrations in Kettleman City and Avenal. If these emissions were to have a measurable effect on ozone levels in the San Joaquin Valley, the effect would be regional as opposed to local.[31] Thus, the communities in Kettleman City and Avenal are not likely to suffer more than multiple other parts of the Valley from adverse impacts resulting from the incremental ozone precursors, VOCs/ROGs and NOx emissions from KHF.

O. Groundwater and Groundwater Monitoring at KHF

The groundwater below the KHF facility is 300-500 feet deep, is of low yield (meaning it can't be extracted in large quantities), and has a high level of dissolved solids, all factors that make human or environmental exposure or use as drinking water very unlikely. The KHF facility is constructed on geologic formations that are part of the westward dipping portion of the North Kettleman Dome anticline. The formations (only some of which contain groundwater), are part of a prehistoric marine environment and dip downward, several thousand feet beneath the Kettleman Plain to the west, away from usable San Joaquin Valley groundwater aquifers to the east. Studies have shown that the groundwater is relatively old, with no recent natural recharge occurring. Due to the lack of groundwater recharge, gradients are very flat and groundwater flows only about 1-10 feet per year to the southwest, parallel to the Kettleman Plain.

The poor quality saline groundwater, with Total Dissolved Solids (TDS) ranging from approximately 1,000 to over 20,000 milligrams per liter, occurs at depths of approximately 300 feet to 500 feet in isolated sandstone beds. The Regional Water Quality Control Board ("Regional Board") has determined that groundwater, contained in formations generally within one-half mile of the KHF facility, is not used for and is not suitable for municipal or domestic water supply. Due to the poor quality and limited availability, the groundwater has no beneficial uses other than for minor stock watering and industrial applications only if sufficient quantities could be obtained.

Through groundwater monitoring KHF has detected various organic constituents in several groundwater-bearing zones underlying the facility. KHF has implemented corrective action in the form of pumping and treating the groundwater**.** Due to the very slow rate of groundwater flow and hydraulic isolation of the groundwater, groundwater migration beyond the facility property boundary and toward any of the San Joaquin Valley community drinking water supplies to the east, for example, is highly unlikely.

KHF conducted annual monitoring for PCBs from the early 1980's until 1998 and detected PCBs at levels between 1 ppm and 3 ppm in groundwater in 1985 and 1995. In 1998, a revised monitoring plan required 27 detection monitoring wells and 8 corrective action monitoring wells to analyze groundwater samples for PCBs every 4.5 years. None of the samples collected in 2002 that were analyzed for PCBs exceeded the detection limit of 1.0 ppb. An additional 10 evaluation wells are sampled and analyzed for PCBs every year. None of the samples collected from the evaluation wells since 1998 have exceeded the detection limit of 1.0 ppb. The Department of Toxic Substances Control (DTSC) and the Regional Board technical staff review the monitoring results.

To protect public health, under the Safe Drinking Water Act (SDWA), EPA sets enforceable standards called Maximum Contaminant Levels (MCL). The MCL for PCBs has been set at 0.5 ppb because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water. TSCA imposes two standards that relate to water and groundwater. The TSCA standard for water discharged to a water treatment plant or navigable surface waters (neither of which occur at KHF) is 3 ppb. The TSCA standard for unrestricted water use (which protects potential drinking water sources) is 0.5 ppb.

[31] KHF B-17 Landfill Project Draft SEIR, Appendix D: Air Quality Technical Analysis, November, 2005, p. 5-2, 5-3.

KHF's landfill B-18 has several design features that prevent the release of PCBs to groundwater: a double liner, a Leachate Collection and Recovery System (LCRS), and a final cover applied once the landfill closes. EPA has approved the reports certifying that KHF has constructed the landfill units, including the liner systems and leachate collection systems, properly. In addition, KHF will sample the groundwater periodically to ensure that the landfill is operating properly.

Since modern landfills with double liner designs similar to those found in landfill B-18 have only been in use since 1980, little data exists about long-term landfill durability. However, a 2002 report by the EPA National Risk Management Research Laboratory concluded that the engineering properties of such landfill liners are stable over the long term. The report estimated the performance of such liners may deteriorate by 50% within a thousand years. The upper "primary" leachate collection and removal system (LCRS) collects any liquid or leachate that passes through the waste material and down to the liner system. The purpose of the LCRS is to prevent liquids (leachate) from sitting on top of the liner system. Since 1994, KHF has not detected PCBs in leachate. This indicates that PCBs are not currently leaching from the waste and moving to the liner system at the base of the landfill unit.

As noted above, the liner and leachate collection system is backed up by a system of groundwater monitoring wells. If the liner system does leak, the groundwater monitoring wells are designed to detect the leak so that actions can be taken to protect the groundwater (even though it is not suitable for use). In addition, the period of post-closure care may be extended if EPA decides that such action is necessary to protect human health or the environment.

P. Conclusions about Kettleman Hills Facility

Based on US EPA's evaluation of modeling and monitoring data for KHF, US EPA finds no evidence that KHF causes an adverse impact on the communities of Kettleman City or Avenal.

IV. TSCA FACILITIES – COMPARISON OF COMPLIANCE RECORDS

Community residents expressed concern about KHF's compliance record, so US EPA collected and analyzed the TSCA and RCRA compliance records for KHF and compared these to the TSCA and RCRA compliance records for currently operating PCB disposal sites throughout the nation.[32]

This analysis extracted TSCA data from US EPA's FIFRA/TSCA Tracking System (FTTS) database, which contains inspection, enforcement, and compliance data for PCB facilities. The data covers the period 1990 – 2005, although, as noted in Table IV-A, some of the PCB disposal sites were not operational for that entire period, and thus the data only covers the period indicated. Table IV-A shows the number of TSCA inspections conducted at each facility, the number of TSCA notices of non-compliance (NONs), the number of TSCA formal enforcement actions (a civil complaint), and the years of operation between 1990 and 2005. A notice of noncompliance is an informal letter to a facility about a violation.

This analysis extracted RCRA data from US EPA's Integrated Data for Enforcement Analysis (IDEA) database, which contains inspection, enforcement, and compliance data for RCRA facilities for the past five years. All of these facilities were operational and accepting RCRA wastes during the past five years. Table IV-B shows the number of RCRA inspections conducted at each facility, the number of notices of violation (NOV) or informal enforcement actions, and the number of formal enforcement actions.

Under RCRA, an "Informal Administrative Action" is any communication from US EPA or an authorized state that notifies the facility of a problem. US EPA can take this action through a phone call or an informal letter, such as a "notice of violation." This type of action is appropriate when the violation is minor, such as a record maintenance requirement. US EPA takes a "Formal Action" when it finds a

[32] List available at http://www.epa.gov/pcb/stordisp.html#ChemLF

more severe violation or when the owner and/or operator does not respond to an informal action. An example of a Formal Action is an "administrative order," which imposes enforceable legal duties on the facility.

Table IV-A: TSCA Compliance 1990 – 2005

Facility	Location	#TSCA inspections	#TSCA NONs*	#TSCA formal enforcement actions	Dates/ #years
Chemical Waste Management	Emelle, AL	15	3	4	1990 –2005 16 years
Chemical Waste Management	Kettleman City, CA	8	2	1	1990 –2005 16 years
CWM Chemical Services	Model City, NY	14	0	4	1990 –2005 16 years
US Ecology	Beatty, NV	7	1	0	1990 –2005 16 years
Chemical Waste Management	Arlington, OR	15	1	1	1991-2005 15 years
Clean Harbors Grassy Mt.	Salt Lake City, UT	2	0	0	2002-2005 4 years
US Ecology	Boise, ID	3	0	0	2001 – 2005 5 years
Waste Control Specialist, LLC	Andrews, TX	2	0	0	1994 – 2005 12 years
Wayne Disposal	Belleville, MI	2	0	0	1997 – 2005 9 years

*NON = Notice of Noncompliance

Table IV-B: RCRA Compliance 2000 – 2005[33]

Facility	Location	#RCRA inspections (site visits)	#RCRA file reviews	#RCRA NOV* or informal enforcement actions	#RCRA formal enforcement actions	Dates
Chemical Waste Management	Emelle, AL	11	45	6	1	2001 - 2005
Chemical Waste Management	Kettleman City, CA	12	1	1	2	2001 - 2005
CWM Chemical Services	Model City, NY	15	6	3	4	2001 - 2005
US Ecology	Beatty, NV	8	0	1	6	2001 - 2005
Chemical Waste Management	Arlington, OR	6	5	1	0	2001 - 2005
Clean Harbors Grassy Mt.	Salt Lake City, UT	11	0	3	1	2001 - 2005
US Ecology	Boise, ID	79	14	2	1	2001 - 2005
Waste Control Specialist, LLC	Andrews, TX	10	5	6	0	2001 - 2005
Wayne Disposal	Belleville, MI	52	38	14	1	2001 - 2005

*NOV = Notice of Violation

[33] Data compiled from US EPA's IDEA data base, obtained 12 Oct 05.

A. Inspections

Table IV-C shows that TSCA inspections occurred at PCB disposal sites at the frequencies noted below:

Table IV-C: Average number of TSCA Inspections per Year		
Facility	**Location**	**#TSCA inspections/year**
Chemical Waste Management	Emelle, AL	0.93 (almost one inspection per year)
Chemical Waste Management	Kettleman City, CA	0.5 (one inspection every two years)
CWM Chemical Services	Model City, NY	0.87 (one inspection every 1.2 years
US Ecology	Beatty, NV	0.43 (one inspection every 2.3 years)
Chemical Waste Management	Arlington, OR	1 (one inspection per year)
Clean Harbors Grassy Mt.	Salt Lake City, UT	0.5 (one inspection every two years)
US Ecology	Boise, ID	0.6 (one inspection every 1.7 years)
Waste Control Specialist, LLC	Andrews, TX	0.17 (one inspection every 5.9 years)
Wayne Disposal	Belleville, MI	0.22 (one inspection every 4.5 years)

The TSCA inspection history shows that four facilities received TSCA inspections more frequently than KHF. One facility received TSCA inspections at the same frequency as KHF. Three facilities received TSCA inspections less frequently than KHF. The average number of TSCA inspections received per year is 0.58, and KHF facility received 0.5. Thus, the frequency of TSCA inspections at KHF from1990 to 2005 is similar to the average frequency of inspections at other TSCA disposal sites in the nation.

Table IV-D shows the frequency at which RCRA inspections occurred at PCB disposal sites. The RCRA inspections occurred on the portions of the facilities that manage RCRA hazardous waste. For RCRA inspections, please note the important distinction between on-site inspections and inspections that are file reviews and do not include a site visit.

Table IV-D: RCRA Inspections at RCRA/PCB Landfills Inspections between Oct 2000 – Oct 2005			
		Average Inspections per Year	
Facility	**Location**	**Site Visits**[34]	**File Reviews**[35]
Chem. Waste Mgmt.	Emelle, AL	2.2	9.0
Chem. Waste Mgmt.	Kettleman City, CA	2.4	0.2
Chem. Waste Mgmt.	Model City, NY	3.0	1.2
US Ecology	Beatty, NV	1.6	0
Chem. Waste Mgmt.	Arlington, OR	1.2	1.0
Clean Harbors	Grassy Mountain, UT	2.2	0
US Ecology	Boise, ID	15.8	2.8
Waste Control Specialist	Andrews, TX	2.0	1.0
Wayne Disposal	Belleville, MI	10.4	7.6

[34] Site visits include: compliance evaluation inspection (CEI), operation and maintenance inspection, detailed multi-media inspection with CEI, compliance (groundwater) monitoring evaluation, sampling inspection, compliance schedule evaluation, and other evaluation.
[35] File reviews includes: non-financial record review and financial record review.

The RCRA inspection history shows that the majority of the facilities received between 1 and 3 inspections involving a site visit per year. Two facilities received more inspections: Wayne Disposal in Belleville, MI, received approximately 10 inspections per year and US Ecology in Grandview, ID, received approximately 16 inspections per year.

State agencies conducted the majority of the RCRA inspections noted in Table IV-d because the states are responsible for RCRA inspection and enforcement activities at hazardous waste treatment, storage, and disposal facilities. This means that each state implements the RCRA program instead of US EPA for facilities within the state. US EPA generally provides funding to states for conducting RCRA inspections and works with the states in developing their inspections policies. However, the various states may have different policies for how frequently they inspect these types of facilities. At the same time, US EPA retains ultimate oversight authority to ensure that the RCRA program is implemented appropriately.

Although two facilities appeared to receive significantly more inspections than the other seven facilities, evaluation of the level of state activity must consider specific circumstances. For example, if a current formal enforcement order is in place at a facility, a state may decide to conduct more frequent inspections. US EPA believes the State of California's level of effort at KHF, with two to three very thorough inspections per year, to be appropriate for the circumstances at KHF.

B. Violations

The nine PCB disposal sites received a total of eleven TSCA notices of noncompliance or informal enforcement actions. US EPA took two informal TSCA enforcement actions against KHF. The nine PCB disposal sites received a total of five TSCA formal enforcement actions. One formal TSCA forcement action was at KHF.

The nine PCB disposal sites received a total of 57 RCRA notices of violation or informal enforcement actions. One informal RCRA enforcement action took place at KHF. For the nine PCB disposal sites, sixteen were formal RCRA enforcement actions. The State took two formal RCRA enforcement actions against KHF.

Table IV-E: TSCA and RCRA Formal and Informal Enforcement Actions per Year					
Facility	**Location**	**#TSCA NONs/* year**	**#TSCA formal enforcement actions/year**	**#RCRA NOV** or informal enforcement actions/year**	**#RCRA formal enforcement actions/year**
Chemical Waste Management	Emelle, AL	0.19	0.25	1.2	0.2
Chemical Waste Management	Kettleman City, CA	0.13	0.06	0.2	0.4
CWM Chemical Services	Model City, NY	0	0.25	0.6	0.8
US Ecology	Beatty, NV	0	0	0.2	1.2
Chemical Waste Management	Arlington, OR	0.07	0	0.2	0
Clean Harbors Grassy Mt.	Salt Lake City, UT	0	0.25	0.6	0.2
US Ecology	Boise, ID	0	0	0.4	0.2
Waste Control Specialist, LLC	Andrews, TX	0	0	1.2	0
Wayne Disposal	Belleville, MI	0	0	2.8	0.2

*NON = Notice of Noncompliance
**NOV = Notice of Violation

C. Compliance Indicators Conclusions

- *This analysis examined three compliance indicators: inspections, violations, and formal actions. KHF, for the time periods analyzed in this section, on average, did not have more violations and formal actions than other PCB disposal sites in the nation. Therefore, this analysis found no evidence from KHF's compliance record to indicate disproportionate impacts.*

- *None of the violations at KHF analyzed in this section were due to a toxic release that affected nearby communities. Therefore, this analysis found no evidence that the violations at KHF resulted in an adverse impact.*

V. IMPACT OF OTHER ENVIRONMENTALLY REGULATED FACILITIES IN KINGS COUNTY

Kings County has a number of facilities regulated by environmental agencies. These facilities and their environmental data/information offer additional and useful information to assess the overall environmental condition of the area.

For this Draft EJ Assessment, US EPA created two maps to visualize the density of environmentally regulated facilities in the area. The first map (Figure V-a) depicts facility density in San Joaquin Valley. The second map (Figure V-b) shows facility density in Kings County. Both maps show that the area around Kettleman City and Avenal does not have a high density of environmentally regulated facilities when compared with the more urban areas of San Joaquin Valley such as Fresno and Bakersfield. Tables V-A and V-B following the maps show lists of the environmentally regulated facilities in Kettleman City and Avenal.[36]

[36] Facility information can be found on US EPA 's website at: http://www.epa.gov/echo/

Figure V-A

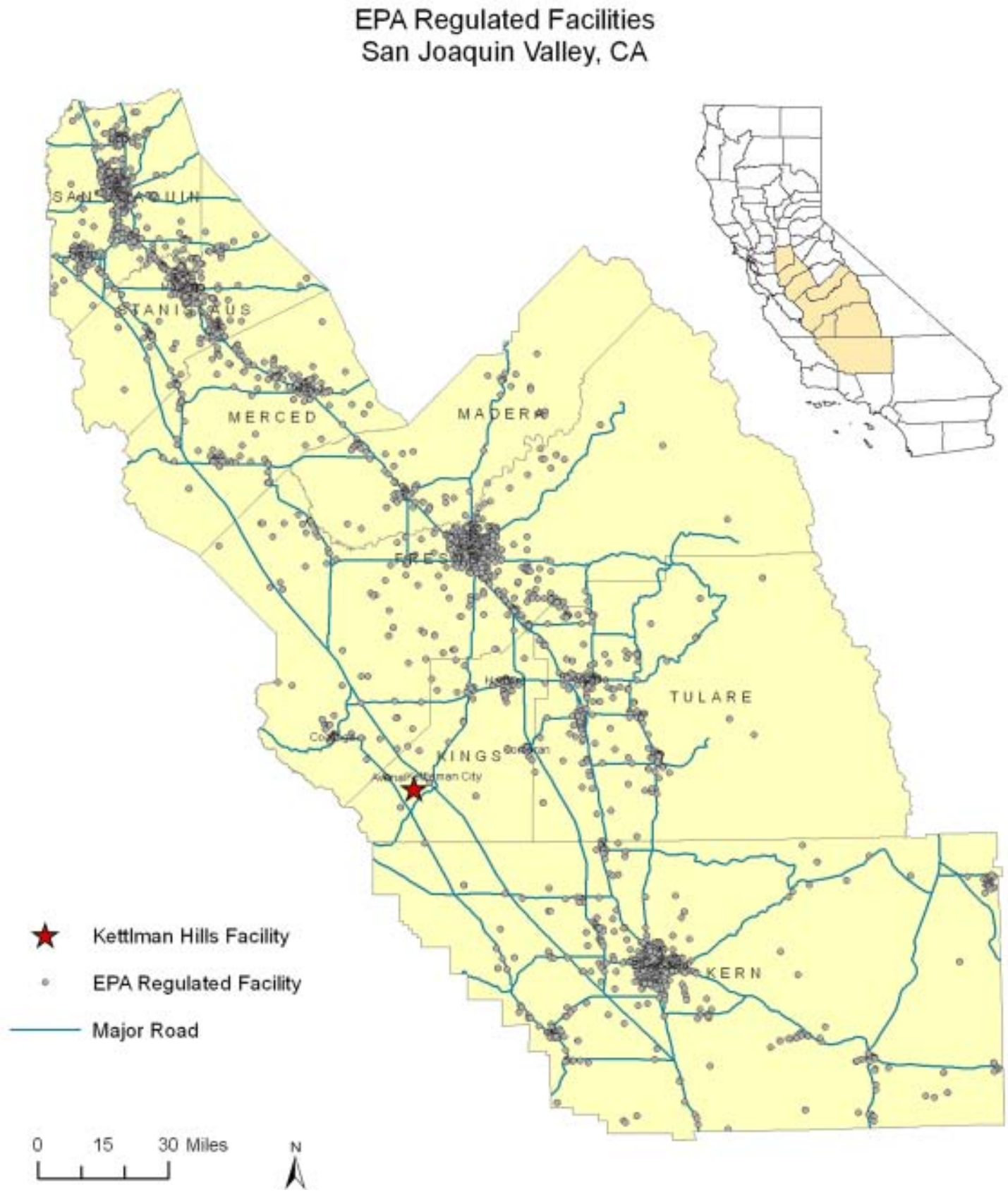

EPA Regulated Facilities
San Joaquin Valley, CA
MERCED
MADERA
TULARE
KINGS
KERN
Kettlman Hills Facility
EPA Regulated Facility
Major Road
0
15
30 Miles
N

Figure V-B

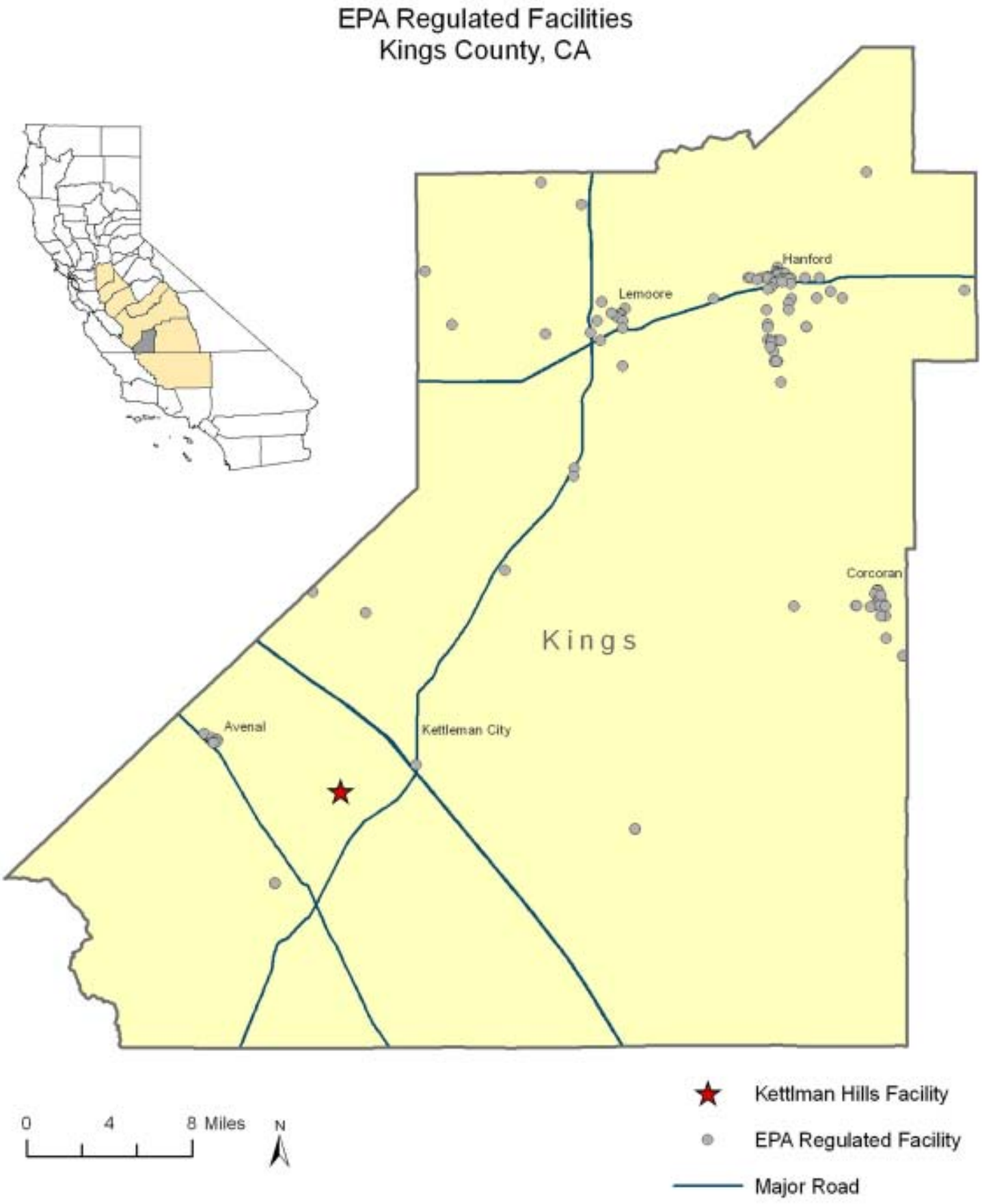

EPA Regulated Facilities
Kings County, CA
Hanford
Lemoore
Corcoran
Kings
Avenal
Kettleman City
0
4
8 Miles
N
Kettlman Hills Facility
EPA Regulated Facility
Major Road

Table V-A: US EPA Regulated Facilities in Kettleman City		
Facility Name	**Address**	**FRS ID**
Chemical Waste Management Incorporated	35251 Old Skyline Rd. Kettleman City, CA 93239	110000481443
Chevron Pipe Line Company	Highway 41 Kettleman City, CA 93239	110018983929
Chevron Station No 96953	27513 Ward Ave. Kettleman City, CA 93239	110013310737
Dudleyridge Farms	25th Ave. Kettleman City, CA 93239	110008267311
J.P. Oil Co.	Section 3, R22S, T17E Kettleman City, CA 93239	110001194555
Paramount Farms	Star Rte. Box 100 5 Kettleman City, CA 93239	110005996084
PG&E Kettleman Compressor	Kettleman Hills Kettleman City, CA 93239	110018853720
Shell #1 Well	5 mi. SE on 1-4 3 mi. E on Utica Kettleman City, CA 93239	110008274456
Shell Oil Company – Station #6	25712 Ward Dr. Kettleman City, CA 93239	110021290226
Weber Implement	26033 30th Ave. Kettleman City, CA 93239	110006480094
Westside Harvesting LLC	26033 30th Ave. Kettleman City, CA 93239	110012221014

Table V-B: US EPA Regulated Facilities in Avenal		
Facility Name	**Address**	**FRS ID**
Benjamin A Gomez	312 Sonoma St. Avenal, CA 93204	110024436751
Bobby C Trucking	932 Skyline Blvd. Avenal, CA 93204	110024426959
Calif State Prison - Avenal	1 Kings Way Avenal, CA 93204	110013832095
Circle K Store #1178	428 Skyline Avenal, CA 93204	110002750210
City of Avenal Water Treatment Plant	33115 Avenal Cutoff Rd. Avenal, CA 93204	110002906954
Coalinga Dist Kettleman	11P Lassen Ave. Avenal, CA 93204	110002945564
Gaspar Trucking	109 N A Ave. Avenal, CA 93204	110024828034
Halliburton Services	333 King St. Avenal, CA 93204	110002824230
Mobil-Pyramid Hills-Dagany	S33&34, T24S, R18E Avenal, CA 93204	110008265402
Mobil-Pyramid Hills-Norris	S28&29, T24S, R18E Avenal, CA 93204	110008265411
ORP Trucking	952 Dome Street Avenal, CA 93204	
Pacific Bell	300 Merced Street Avenal, CA 93204	110002950441
Pacific Bell	Pyramid Hills Radio Station Avenal, CA 93204	110008294318
Pacific Bell	Kettleman Hills Avenal, CA 93204	110008294390
Pacific Bell	St. Hwy. 198 ½ Mi. w/o Avenal Avenal, CA 93204	110008295825
Pacific Gas and Electric Company	34453 Plymouth Avenue Avenal, CA 93204	110002426232
Prison Industry Authority	1 Kings Way Avenal, CA 93204	110024518841
Reynaldo Espinoza M	1124 Lassen St. Avenal, CA 93204	110024436653
Simon Tafoya	421 Marin St. Avenal, CA 93204	110012196319
The Little Ones Transportation	424 E Monterey St. Avenal, CA 93204	110024248232
Unocap Tar Cyn Pump Station	Tar Cyn Rd. and Hwy. 33 Avenal, CA 93204	110008287521
Victor Arechiga DBA Victors Trucking	408 E Monterey St. Avenal, CA 93204	110024428494

Later sections of this Draft EJ Assessment give further discussion of facilities in the following categories:

- Toxics Release Inventory (TRI) and Risk Screening Environmental Indicators (RSEI)
- Comprehensive Environmental Response and Liability Act (CERCLA) Sites
- Resource Conservation and Recovery Act (RCRA) Facilities
- Hazardous Waste Landfills
- Municipal Solid Waste (MSW) Landfills
- Additional projects in the area with Potential Air Quality Impacts

A. Toxics Release Inventory (TRI)

TRI Background Information

The Toxics Release Inventory (TRI) is a publicly available US EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. The inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. EPCRA's primary purpose is to inform communities and citizens of chemical hazards in their areas. Sections 311 and 312 of EPCRA require businesses to report the locations and quantities of chemicals stored on-site to state and local governments in order to help communities prepare for response to chemical spills and similar emergencies. EPCRA Section 313 requires US EPA and the States to annually collect data on releases and transfers of certain toxic chemicals from industrial facilities. It also requires US EPA and States to make the data available to the public in the TRI to promote community awareness and involvement.

It is important to point out that not every facility is required to report to the Toxic Release Inventory. A facility is only subject to TRI reporting requirements if it has 10 or more full-time employees; is classified under a reportable Standard Industrial Classification (SIC) code; and manufactures, processes, or otherwise uses any of the listed toxic chemicals in amounts greater than the threshold quantities. For most of the 650 chemicals and chemical compounds (except persistent, bioaccumulative, and toxic (PBT) chemicals), facilities are required to report if the chemical amounts exceed 25,000 pounds when manufactured or processed and 10,000 pounds when otherwise used. PBT pollutants persist in the environment and bioaccumulate in food chains, posing more risks to human health and ecosystems. Therefore they have lower thresholds that trigger requirements to report ranging from 0.1 grams to 100 pounds.

Kettleman Hills Facility Toxics Release Inventory (TRI) Information

Each year, Region 9 analyzes TRI data and provides state fact sheets highlighting trends and the facilities that drive them. According to the most current data (2004) for California, 1,493 facilities reported a total of 49 million pounds of toxic chemical releases. KHF was identified as the top releaser of TRI chemicals, with 12.2 million pounds[37] of total releases. All but 6,278 pounds represents wastes that were disposed of in permitted units on site. KHF treats, stores, and disposes of hazardous waste.

KHF is a Resource Conservation and Recovery Act (RCRA) landfill, a type of permitted hazardous waste facility which, under RCRA, must comply with strict requirements for liners, leak detection systems, and groundwater monitoring. These regulations are designed to protect human health and the environment. When evaluating KHF's releases it is important to note that releases should not be directly equated with risk. To evaluate risk, release data must be combined with site-specific conditions, exposure, and chemical toxicity. For example, high volume releases of less toxic chemicals may pose less risk then low volume releases of highly toxic chemicals. Furthermore, increases in releases on-site at permitted hazardous waste facilities could mean a reduction in risk because the waste is properly treated, stored, or disposed of.

KHF began reporting to the TRI in 1999, when the Inventory was expanded to include RCRA Subtitle C landfills. KHF is a treatment storage and disposal facility, receiving waste from other facilities, which accounts for both the variation in chemicals reported and amounts of releases from year to year. KHF calculates estimates of the amounts of chemicals that they report to the Toxics Release Inventory from waste stream profiles. Table V-C on the following page shows reported chemicals for Reporting Year 2004, the most recent available.

[37] http://www.epa.gov/region09/toxic/tri/report/04/CAstatefactsheet4-10.pdf

Table V-C: Reported chemicals for KHF in Reporting Year 2004			
Aluminum *fume or dust	Chromium compounds	Mercury Compounds	Tetrachloroethylene
Ammonia	Cobalt compounds	Molybdenum Trioxide	Toulene
Antimony Compounds	Copper Compounds	Nickel Compounds	Urethane
Arsenic Compounds	Creosote	Nitrate Compounds	Vanadium
Asbestos (friable)	Diphenylamine	Nitrilotriacetate Acid	Xylene
Barium	Ethylene Glycol	Pentachlorophenol	Zinc
Benzo(g,h,i)perylene	Hexachlorobenzene	PCBs	Zinc
Cadmium	Lead Compounds	PACs	
Chlordane	Manganeses Compounds	Silver	

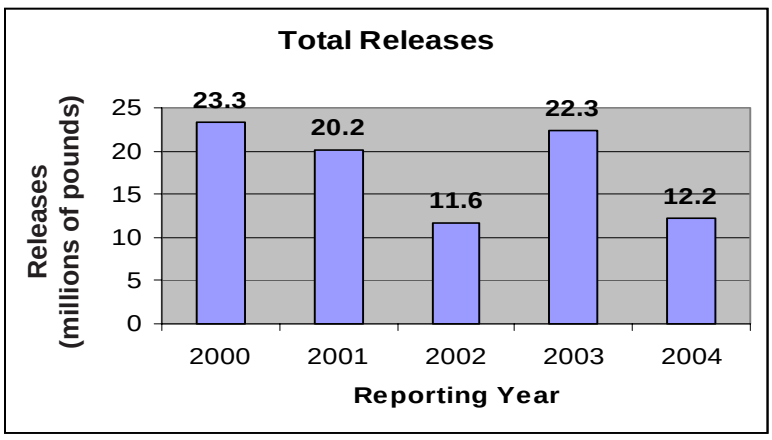
Releases

As a hazardous waste facility, KHF, reports releases for air, land, and transfers off-site. "Reported releases to land" refer to the amount of material that goes into the landfill for disposal. In 2004, KHF reported 12.2 million pounds of TRI chemicals released to land. In addition, KHF reported 6,278 pounds of TRI chemicals released into the air. In 2004, the facility reported that it transferred 748 pounds of TRI material off-site. At this particular facility 99% of releases are on-site to land, which is expected for treatment, storage, and disposal facilities.

Total Releases

Total releases in the last five years have remained relatively constant, except for two out of those five years, which show large decreases in reported releases. This variation is due to a fluctuation in the chemicals that are treated, stored, and disposed of at the facility each year. A chemical may be reported one year in large quantities and the next year not be reported at all. For example, in 2001, KHF reported 5.7 million pounds of total lead releases reported, and in 2002, it reported zero lead releases. This was a large contributing factor to the large overall decrease from KHF in 2002.

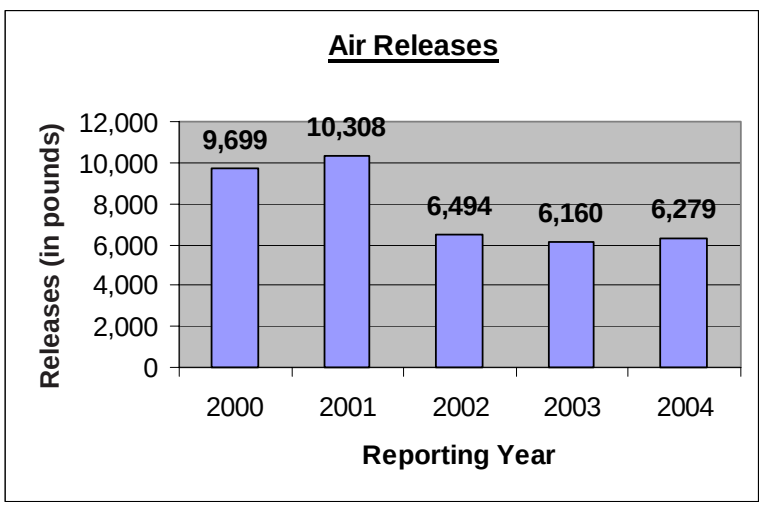
Here is a chart that shows the total releases over the last 5 years:



Air Releases

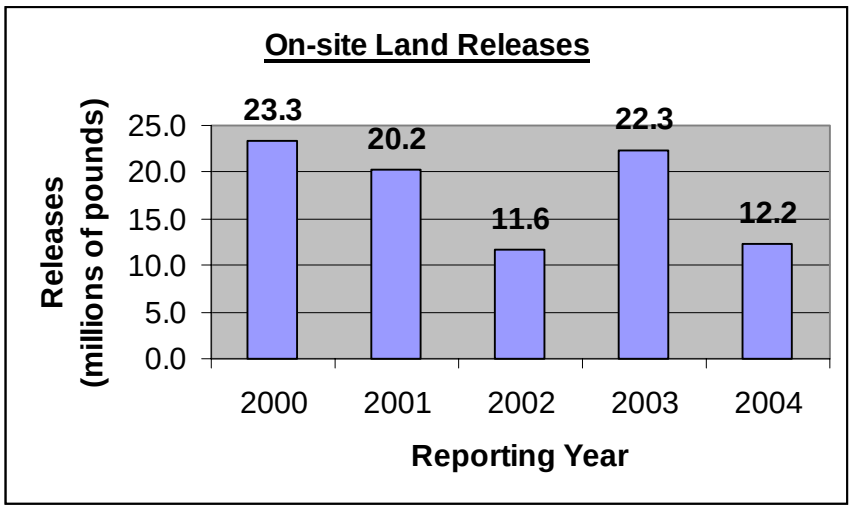
Air releases have remained relatively constant over the past five years. The years in which the amounts seem to drop off is directly related to the fluctuation in chemicals treated, stored, and disposed of at the facility. As previously mentioned, the facility's chemical reporting is based on the materials brought in by customers. In the last three years, 2002-2004, 44 chemicals were reported and 21 of those were reported in all 3 years in very similar amounts.

Here is a chart showing Air Releases over the past five years:



Land Releases

Land releases are the largest category of releases for this facility because it is a treatment, storage and disposal facility. Land release numbers are almost identical to total release numbers because land releases comprise about 99% of total releases at this facility. Again the large changes are a result of what customers send to the facility.



Recycling, Recovery, and Treatment

Overall KHF did not perform any recycling, energy recovery, or treatment on-site of any chemical for the past five years. The only time it did on-site treatment was in 2001 for sulfuric acid.

The majority of recycling, energy recovery and treatment of chemicals occurred off-site. The chemicals that were recycled off-site are manganese, mercury compounds, toluene, and zinc compounds. The chemical that was recovered for energy off-site is xylene. The chemicals that were treated off-site are ethylene glycol, hexachlorobenzene, pentachlorophenol, PCBs, PACs, tetrachloroethylene, toluene, and toxaphene.

B. Risk Screening Environmental Indicators (RSEI)

Risk Screening Environmental Indicators (RSEI) is an application that uses TRI data to compare the relative risk of chemical releases from different TRI facilities and provide a *screening-level* perspective for relative comparisons of risks associated with chemical releases.[38] This tool does not evaluate risk to individuals, nor does it provide a detailed or quantitative assessment of risk (e.g., excess cases of cancer).

The RSEI program is a publicly available model that considers the following information: the amount of chemical released, the location of that release, the toxicity of the chemical, its fate and transport through the environment, the route and extent of human exposure, and the number of people affected. This information is used to create numerical values that can be compared to assess the relative hazard and risk of chemicals, facilities, regions, industries, or many other factors. The values are for comparative purposes and only meaningful when compared to other values produced by RSEI. It should be emphasized that "The results provided by the RSEI model are useful for comparative purposes but, unlike a formal risk assessment, do not describe a specific level of hazard or risk. While RSEI results are useful for targeting and prioritization, the results of all screening-level tools-including RSEI-should be supplemented with additional analyses."[39] Figure V-c shows the model results for San Joaquin Valley.

The RSEI model also evaluates the relative hazard score associated with the air emissions from each facility. Releases to landfills and certain off-site transfers do not have hazard scores associated with them. For example, KHF reported in 2003 that total releases of chromium compounds were 528,334 pounds. Only the 190 pounds of chromium air releases counted toward the relative hazard score of the chemical. Each type of chemical has "toxicity weights" that depend on whether people would be exposed through eating or drinking it (oral exposure route) or through breathing it (inhalation exposure route). To calculate the relative hazard score, multiply the number of pounds of the chemical by this chemical-specific toxicity weight for the exposure route (oral or inhalation) associated with the release.[40] For these results, no exposure modeling or population estimates are involved. If no toxicity weight is available for the chemical, then the hazard score is zero. When evaluating the 2005 version of RSEI (which is based on 2003 TRI data) in this manner, San Joaquin Valley has 122 TRI facilities. Five TRI facilities are located in Kings County. When the TRI facilities in San Joaquin Valley are ranked from the highest hazard score to the lowest hazard score, KHF is ranked as #12.

Based on the 2003 TRI reporting year data, the relative ranking for the RSEI hazard scores for the TRI facilities in Kings County in the San Joaquin Valley are shown below.

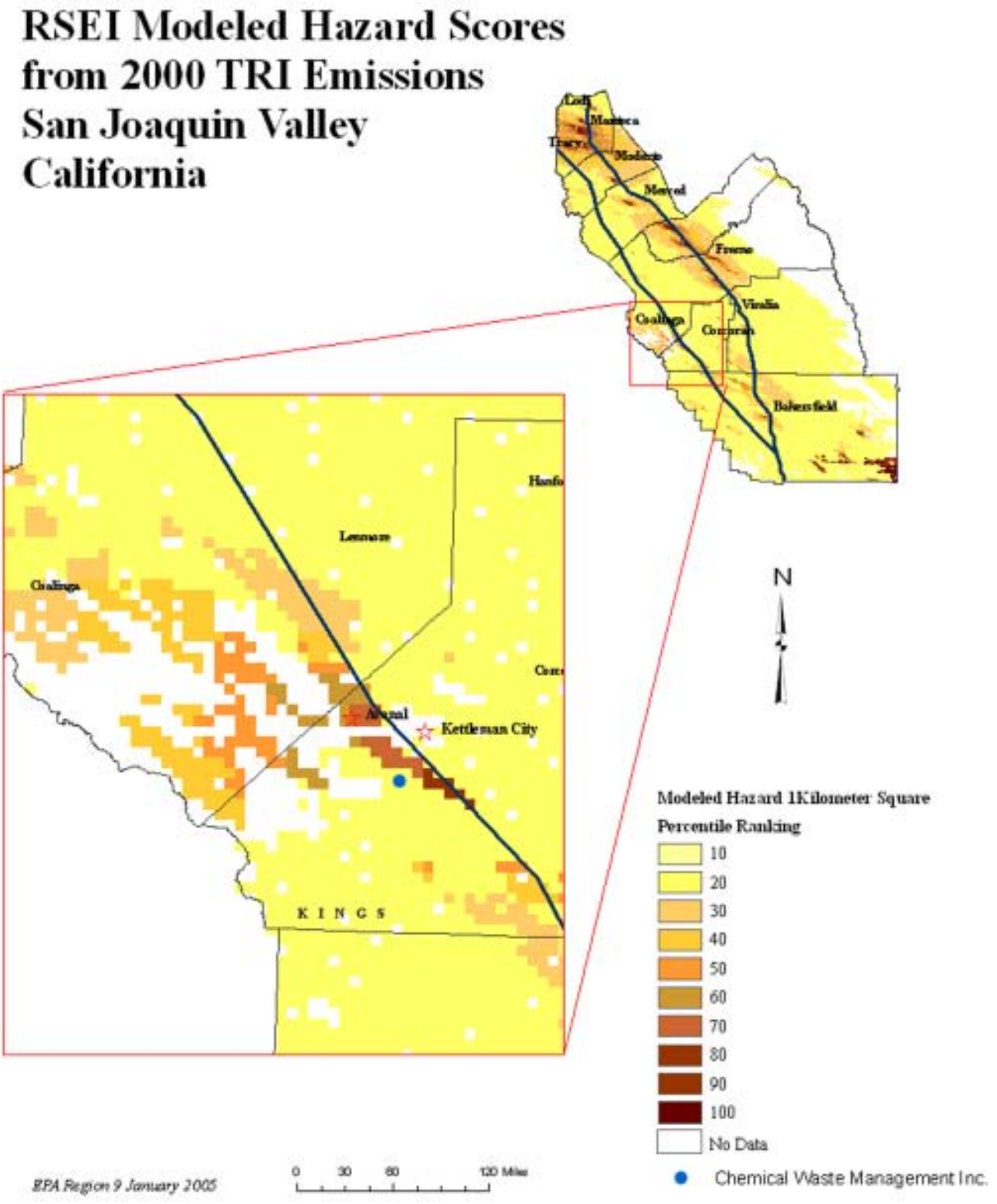
Ranking	Facility Name
#9	JG Boswell Co. Oil Mill, Corcoran
#12	KHF, Kettleman City
#66	CDR Sys. Corp, Corcoran
#72	Hanford LP, Hanford
#104	Leprino Foods, Lemoore

KHF has the 12th highest RSEI hazard score of all 122 TRI facilities in the San Joaquin Valley. As shown Figure V-C, which is based on air modeling results of the RSEI hazard scores, the TRI emissions from KHF might travel a sufficient distance to affect the communities of concern. Specifically, the simplistic air modeling conducted in RSEI predicts that the emissions from KHF can travel as far as Avenal (Figure V-C).

[38] http://www.epa.gov/opptintr/rsei/get_rsei.html
[39] http://www.epa.gov/opptintr/rsei/rsei_work.html
[40] http://www.epa.gov/opptintr/rsei/pubs/basic_information.html

Table V-D: RSEI Rankings for Kings County and San Joaquin Valley		
	Total Number of Facilities	Ranking of KHF
Kings County	5	2
San Joaquin Valley	122	12

Figure V-C



C. Comprehensive Environmental Response, Compensation, and Liability Act (or CERCLA) Sites

CERCLA, more commonly called Superfund, evaluates sites to determine their eligibility for the National Priorities List (NPL). For our analysis, we have not considered sites that are not eligible for the NPL. Sites already on the NPL were considered. The NPL is an information and management tool of the Superfund site cleanup process. A specific site is listed on the NPL after the Hazard Ranking System (HRS) screening process has been completed and public comments about the proposed site have been solicited and addressed. The NPL represents the highest priority sites for the Superfund Program (Superfund's Emergency Response Program addresses short term actions). California has more than 100 NPL sites. Kings County contains no NPL sites.

D. Resource Conservation and Recovery Act (or RCRA) Facilities

RCRA is the federal law that regulates hazardous waste management. In California, the DTSC is authorized to implement this law instead of US EPA. Similar to CERCLA, RCRA categorizes the facilities regulated under this law. The most significant category is the Treatment, Storage and Disposal (TSD) Facilities. TSDs are facilities that store waste for greater than 90 days, treat waste, or dispose of waste in the land, and may receive wastes from off-site. These facilities require permits to operate. A second category is Large Quantity Generators (LQG) of hazardous waste. LQGs may store their own waste on-site for less than 90 days, but may not receive waste from off-site and may not treat or dispose of the waste on-site. Together these are the facilities considered in US EPA's evaluation of facility density. Another category of facilities is the Small Quantity Generator (SQG). These facilities are under the same general restrictions noted for LQGs, but generate less than 2,200 pounds of hazardous waste per month.

Seven RCRA facilities are located in the same zip code where KHF is located. These facilities are KHF, Chevron USA Inc - Kettleman Station, Dudleyridge Farms, Paramount Farms, Shell Service Station, Weber Implement, and Westside Harvesting LLC.[41] Kings County has over 100 RCRA facilities. California has more than 57,000 RCRA facilities. These figures include TSDs and LQGs. As shown in Figure V-B, the area around Kettleman City and Avenal does not have a high density of RCRA facilities when compared with the more urban areas of San Joaquin Valley such as Fresno, Bakersfield, Corcoran, Hanford and Lemoore.

E. Hazardous Waste Landfills

California has three RCRA commercial hazardous waste landfills: KHF, Clean Harbors Buttonwillow in Buttonwillow and Clean Harbors Westmoreland in Westmoreland. KHF receives more hazardous waste per year than the other two landfills. Because there are only three commercial hazardous waste landfills in California, and KHF is the largest, there exists a potential for disproportionate impacts to nearby communities. The potential for adverse impacts from the hazardous waste landfill activities at KHF is discussed in Section III.

F. Municipal Solid Waste (MSW) Landfills

Subtitle D of RCRA regulates these landfills. They are prohibited from receiving hazardous wastes that are subject to RCRA Subtitle C regulation, although these facilities may receive hazardous wastes derived from households and from conditionally exempt small quantity generators (e.g., metals manufacturing facilities, laundries, and printing/ceramics shops).[42] In California the Integrated Waste Management Board ("Waste Board") oversees such facilities. According to Waste Board's Solid Waste Information System, Kings County has two active solid waste landfills – the Avenal Landfill and KHF.[43] In addition, Kings County has three active waste tire locations. California has more than 500 MSW landfills.

[41] http://www.epa.gov/enviro/html/rcris/rcris_query_java.html
[42] http://www.epa.gov/epaoswer/hazwaste/sqg/cesqgrpt/cesqgrpt.pdf
[43] http://www.ciwmb.ca.gov/swis/search.asp

The Center for Justice, Tolerance and Community produced a report for the Waste Board entitled "Environmental Justice Opportunity Assessment and Analysis.[44]" This report concluded:

> "…there is some evidence of demographic difference with regard to the proximity of permitted transfer stations and waste tire recyclers to certain neighborhoods. Permitted landfills, on the other hand, seem to be more equitably distributed in terms of income and ethnicity. However, a more sophisticated multivariate analysis of landfill location suggests the potential for racial differences in proximity once we control for whether an area is rural or urban, as well as other factors. Controlling, in statistical parlance, means taking into account the multiple factors that might lead to siting. We generally expect, for example, that transfer stations will be in urban areas where waste transfers are necessary. Since California's urban areas are more minority, the correlation of percent minority and likelihood of a transfer station could reflect this fact rather than any pattern of racial inequity in siting of transfer stations. However, the use of appropriate statistical techniques to control for whether or not an area is urban or rural, as well as other factors, still suggests a pattern of racial difference with regard to proximity of minority populations to transfer stations and waste tire recyclers, and also reveals evidence of racial difference with regard to siting of landfills. This may influence the perception and context for community participation around environmental justice."

Kings County only has two municipal and solid waste landfills: one is located in Kettleman City and the other is in Avenal. Thus, there exists the potential for disproportionate impacts. The potential for adverse impact from the municipal waste landfill activities at KHF is discussed in Section III.

G. Additional Projects in the Area with Potential Air Quality Impacts

Several projects in the local area do not necessarily require environmental permits but could impact the air quality: the Avenal Landfill expansion, Westlake Farms, and the Caltrans SR-41 Rehabilitation project. All of these projects would contribute additional NOx, ROG, PM10 and PM2.5 to the local air quality. In addition, the Conway Truck Transfer facility, located on SR-41 near the community of Kettleman City, potentially contributes additional truck traffic and diesel emissions to the local area.

H. Conclusions about the Impact of Other Regulated Facilities in Kings County

- *The following four indicators had values that indicated a potential for disproportionate impact: Toxics Release Inventory (TRI), Risk Screening Environmental Indicators (RSEI), municipal solid waste landfills, and hazardous waste landfills.*

- *The TRI and RSEI indicators are estimates of the air toxics emissions from KHF. Although TRI and RSEI show a potential for disproportionate impact, these are screening level tools, and more detailed analysis of the potential risks from the air toxics from KHF were evaluated in the risk assessment which is summarized in Section III. The risk assessment shows that the risks associated with these air toxics emissions from KHF do not exceed the one in a million threshold. Thus the community of Kettleman City does not suffer from adverse impacts resulting from the incremental air toxics emissions from KHF.*

- *In evaluating the overall potential for adverse impacts of municipal and hazardous waste activities at KHF, US EPA examined in detail the site-specific data for KHF. The past air monitoring (1986-1995) conducted in the communities of Kettleman City and Avenal did not detect contaminants at levels of concern. Also, the 1995 Air Study showed that air-borne contaminants from KHF would not cause unacceptable risks to nearby communities. In addition, the 2005 Draft Supplemental Environmental Impact Report (SEIR) for B-17 examined all potential impacts associated with the operation of the municipal and hazardous waste landfill activities at KHF. The multi-pathway risk assessment concluded that risks to the nearby communities are very low and below the regulatory*

[44] Available on the internet at http://www.ciwmb.ca.gov/publications/General/52004008.pdf

threshold. In addition, air modeling of PM10 and PM2.5 showed that emissions from KHF activities do not contribute significantly to PM10 and PM2.5 concentrations in Kettleman City and Avenal. Thus, the communities in Kettleman City and Avenal do not suffer from adverse impacts resulting from the incremental PM10 and PM2.5 emissions from KHF.

- *Several projects in the local area potentially affect the air quality of the local area: the Avenal Landfill expansion, Westlake Farms, Caltrans SR-41 Rehabilitation project, and the Conway truck transfer facility.*

VI. AIR QUALITY

Air quality is an important part of this Draft EJ Assessment because the community has expressed concern about this issue. Air quality impacts may be particularly of concern for children and at risk populations (individuals with heart or lung diseases, the elderly, etc.).

This Air Quality section looks at two different data sources:(1) criteria pollutants based on air monitoring networks; and (2) the 1999 National-Scale Air Toxics Assessment, a US EPA national project to model air toxics based on a 1999 national inventory of air toxics emissions from outdoor sources.

The US EPA has designated the San Joaquin Valley a non-attainment area for PM2.5 (particles less than 2.5 micrometers in diameter), PM10 (particles less than 10 micrometers in diameter), and ozone (also known as smog). The San Joaquin Valley is particularly vulnerable to air pollution formation because of its topography, climate, growing population, and large-scale agriculture. Surrounding mountains trap airborne pollutants near the Valley floor where people live and breathe.

Air quality presents a health concern in the San Joaquin Valley all year long. Ozone is a problem in the summer due to the Valley's hot summer temperatures, while particulate matter levels in San Joaquin Valley air typically peak in the fall and winter. Ozone is formed when volatile organic compounds (VOCs) and oxides of nitrogen (NOx) coming from motor vehicles and stationary sources combine with sunlight in a chemical reaction. PM10 and PM2.5 includes soil dust particles; particles from automotive and truck tailpipes; particles from burning wood for heat; and particles that form in the foggy winter atmosphere from the combination of gases such as ammonia from cattle and dairy feed lots, nitric acid, and sulfur dioxide from vehicle exhaust.

The smaller the particle, the more likely it will lodge deep into the lungs. Serious health impacts are linked to exposure to fine particle pollution, including premature death from heart and lung disease, increased hospital admissions and doctor and emergency room visits, and absences from work and school. Those with respiratory problems, asthma, the elderly and children are most affected by particle pollution.

Exposure to high levels of ozone can lead to lung inflammation and lung tissue damage and can induce or aggravate asthma symptoms. Research has linked exposure to elevated ozone levels and asthma rates in children. More information about air quality can be found on the California Air Resource Board website,[45] the US EPA website,[46] and AIRNOW.[47]

A. Criteria pollutants and National Ambient Air Quality Standards

The Clean Air Act, which was last amended in 1990, requires US EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. *Primary standards* set limits

[45] http://www.arb.ca.gov/research/health/fs/PM-03fs.pdf
[46] http://www.epa.gov/region09/annualreport/03/air.html
[47] http://airnow.gov/.

to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. *Secondary standards* set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

For this Draft EJ Assessment, US EPA focused on ozone, PM10 and PM2.5, since the San Joaquin Valley is a non-attainment area for these three pollutants. US EPA evaluated monitoring data in San Joaquin valley for any violations of the primary NAAQS for the years 2003 to 2005.[48]

Table VI-A shows that the San Joaquin Valley does not currently meet the PM2.5 and ozone National Ambient Air Quality Standards (NAAQS). The NAAQS were violated in Kings County and several other counties within the San Joaquin Valley. PM10 levels did not violate the NAAQS levels from 2003 through 2005, and accordingly, on October 16, 2006, US EPA administratively determined, consistent with the Clean Air Act, that the area has attained the PM10 standards.[49]

Table VI-A: San Joaquin Valley: Violations of NAAQS from 2003 - 2005

County	Ozone	PM2.5	PM10
San Joaquin	no	no	no
Madera	yes	no monitors	no monitors
Kings	yes	yes	no
Stanislaus	yes	no	no
Merced	yes	yes	no
Tulare	yes	yes	no
Fresno	yes	yes	no
Kern	yes	yes	no

B. National-Scale Air Toxics Assessment (NATA)

US EPA's National-Scale Air Toxics Assessment (NATA) estimates at the census tract level the 1999 ambient air concentrations of 133 hazardous air pollutants (a subset of the Clean Air Act's list of 188) plus diesel particulate matter (PM). The NATA bases its estimate on emissions inventories, air dispersion modeling, inhalation exposure modeling, and risk assessment/characterization.

This NATA assessment provides estimates of exposure and health risk by considering where people spend their time and how much of these pollutants they breathe. This means that the NATA assessment attempts to account for the movement and activities of people. Their activities, as well as their locations, can have an effect on their exposure to different substances. The results of the NATA assessment are designed to provide answers to questions about emissions, ambient air concentrations, exposures and risks across broad geographic areas (such as counties, states and the Nation). Air toxics, also known as toxic air contaminants or hazardous air pollutants, are those pollutants known to or suspected of causing cancer or other serious health problems. Health concerns may be associated with both short and long term exposures to these pollutants. Many air toxics are known to have respiratory, neurological, immune or reproductive effects, with potentially greater impacts to susceptible sensitive populations such as children and the elderly.

[48] Data available at: http://www.epa.gov/air/data/
[49] Federal Register: 71 FR 63642, October 30, 2006.

Estimated Cancer Risk

The estimated cancer risk values represent modeled estimates of the number of excess cases of cancer per 1 million individuals as a result of inhalation exposures to the modeled air toxics. Cancer risk values of 1 in 1 million or lower are generally considered to be acceptable. The estimated cancer risk values in Figure VI-A below are based on exposure to the average pollutant concentrations for a period of 70 years. Cancer risk scores greater than 100 in 1 million are generally considered to pose unacceptable risks. Most urban locations have an estimated cancer risk greater than 25, while urban areas in transportation corridors tend to have estimated cancer risks greater than 50 in a million. In the map below the distribution of modeled cancer risk in the Southern San Joaquin Valley is represented at the census tract level to show the relative distribution of cancer risk in this area.

Cancer risk is typically expressed in exponential form (i.e. 1 x 10^{-6}, meaning one in one million), which describes the increased possibility of an individual developing cancer from exposure to toxic materials. Calculations producing cancer risk numbers are complex and typically include a number of assumptions that tend to cause the final estimated risk number to be conservative. On average approximately one in three (or 3.3 X 10^{-1}, meaning 333,333 in a million) people will get cancer in their lifetimes.

Figure VI-A shows the relative distribution of estimated cancer risk (by census tract) within the San Joaquin Valley in California. Kettleman City and Avenal in Kings County are within an area of the Valley that has the lowest estimated risks associated with it (<25 in a million). The highest values are associated with urbanized areas with greater density of population and roads. NATA cannot identify potential health concerns in the immediate vicinity of any specific source, so local high-impact areas in a community are still possible.

Estimated Non-Cancer Inhalation Hazard

Air toxics are associated with a wide variety of non-cancer adverse health effects that include neurological, cardiovascular, liver, kidney, and respiratory effects as well as effects on the immune and reproductive systems. The seriousness of the harm can range from headaches and nausea to respiratory arrest and death. Severity varies with the amount and length of exposure, the nature of the chemical itself (e.g., how it interacts with various organs and organ systems), and the unique behaviors and sensitivities of individual people. Some chemicals pose particular hazards to people of certain ages or genetic backgrounds.[50]

The US EPA expresses dose-response relationships for effects other than cancer in terms of the inhalation (RfC). The RfC is a concentration of the compound in air expected to be without adverse effects even if a person is exposed continuously. In other words, exposures below the RfC are unlikely to cause adverse non-cancer health effects. To express non-cancer hazards the US EPA uses the RfC as part of a calculation called the hazard quotient (HQ). The HQ is the ratio between the concentration of a compound to which a person is potentially exposed and the RfC. The estimated non-cancer inhalation risk is represented as a Hazard Index (HI) which is the sum of the HQ for individual air toxics compounds that have similar effects on the same organ or organ system. A value of the HI greater than one indicates that a potential may exist for adverse non-cancer health effects because the concentration exceeds the amount deemed to have no adverse health effects.

[50] http://www.epa.gov/ttn/atw/nata/riskbg.html

Figure VI-A

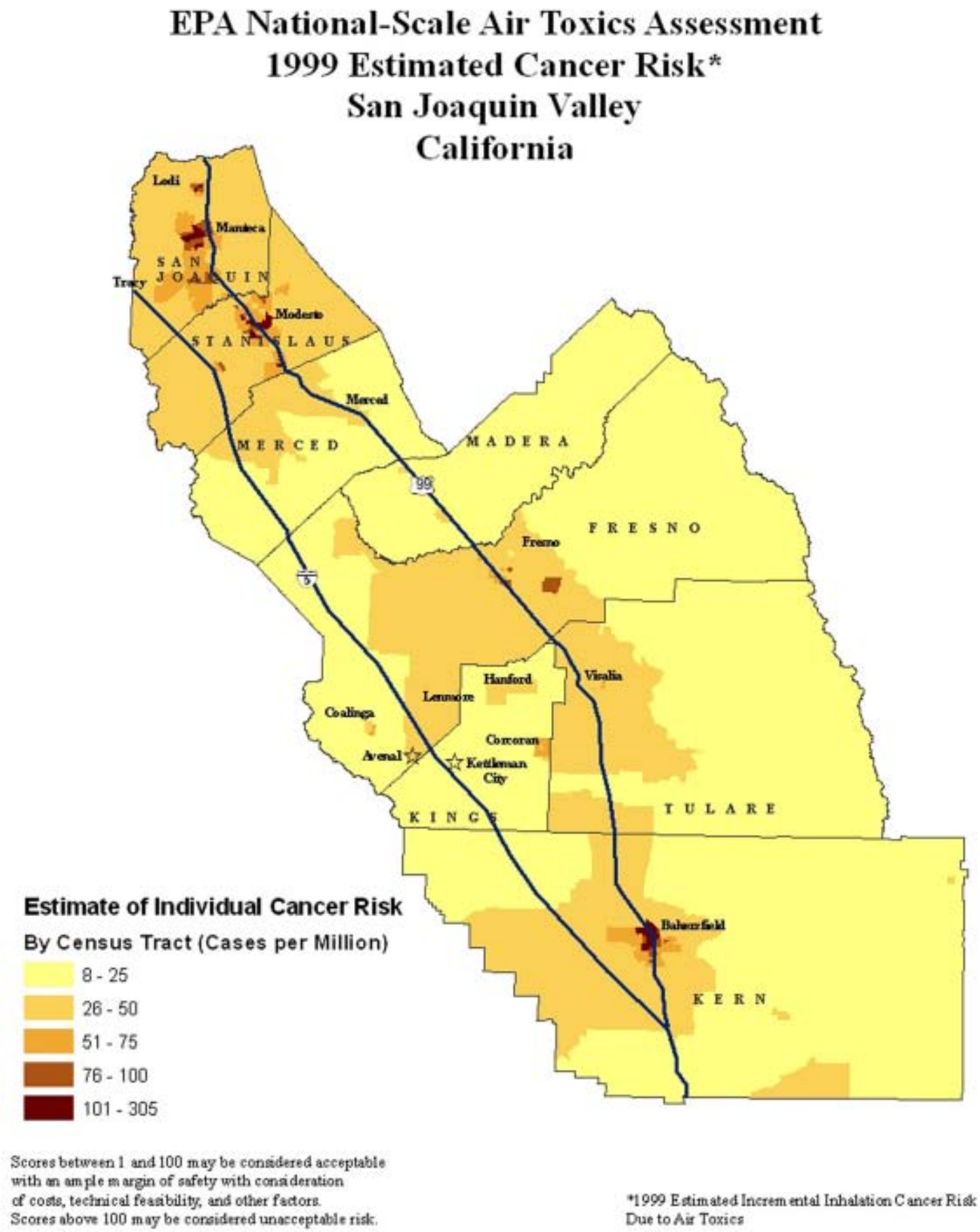
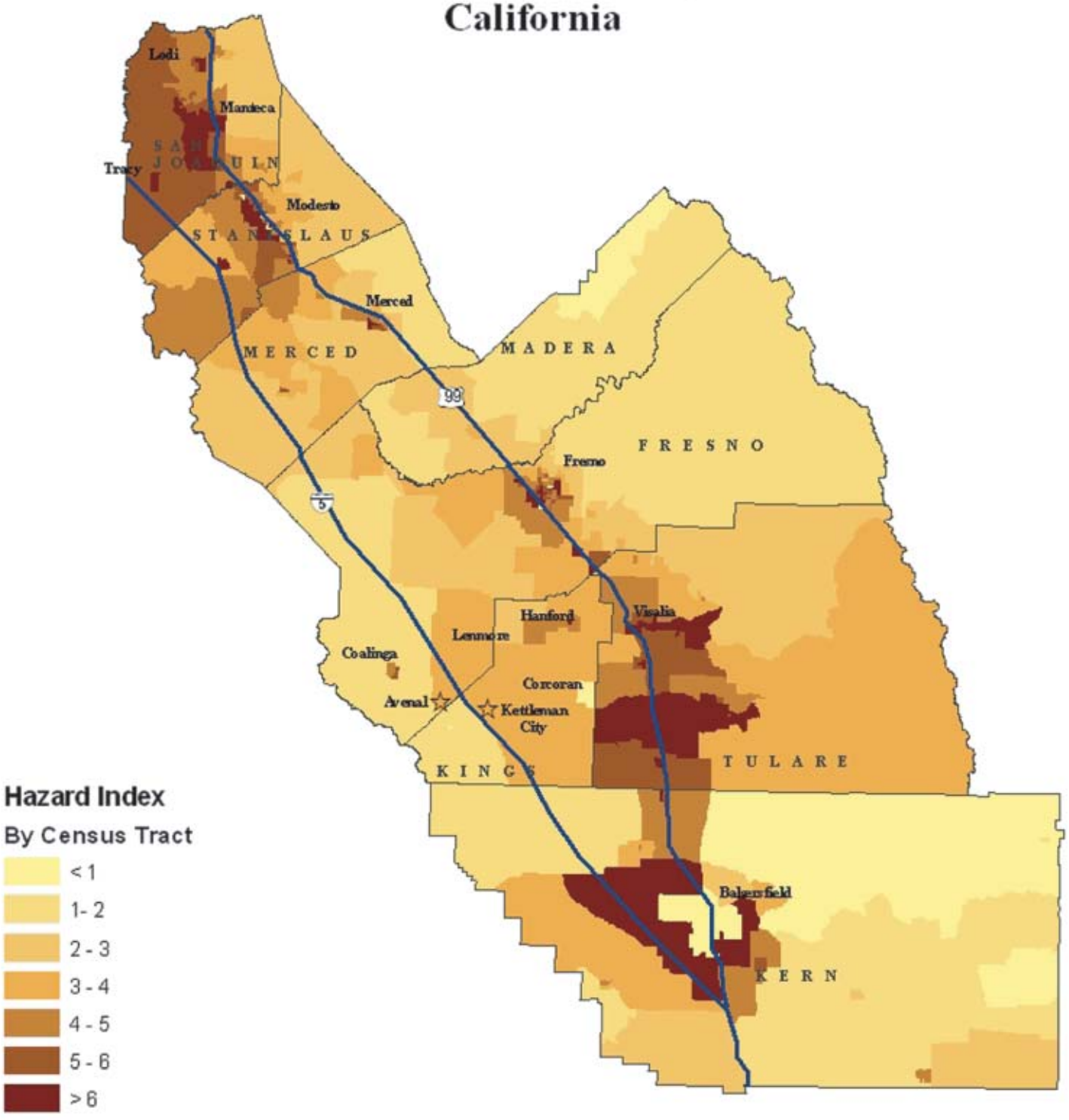

EPA National-Scale Air Toxics Assessment
1999 Estimated Cancer Risk*
San Joaquin Valley
California
Lodi
Manteca
Tracy
SAN JOAQUIN
Modesto
STANISLAUS
Merced
MERCED
MADERA
99
FRESNO
Fresno
5
Hanford
Visalia
Lemoore
Coalinga
Corcoran
Avenal
Kettleman City
KINGS
TULARE
Bakersfield
KERN
Estimate of Individual Cancer Risk
By Census Tract (Cases per Million)
8 - 25
26 - 50
51 - 75
76 - 100
101 - 305
Scores between 1 and 100 may be considered acceptable with an ample margin of safety with consideration of costs, technical feasibility, and other factors.
Scores above 100 may be considered unacceptable risk.
*1999 Estimated Incremental Inhalation Cancer Risk Due to Air Toxics

Figure VI-B

EPA National-Scale Air Toxics Assessment
1999 Estimated Non-Cancer Respiratory Hazard*
San Joaquin Valley
California



Hazard Index scores below 1 are generally considered to be acceptable. Scores above 1 may be a concern for potential health effects.

*1999 Estimated Incremental Inhalation Cancer Hazard Due to Air Toxics

Both Avenal and Kettleman City have Hazard Index (HI) values above 1. A value of the HI greater than 1 indicates that a potential may exist for adverse non-cancer health effects because the concentration exceeds the amount determined to have no adverse health effects. However, the distribution of HI values for the San Joaquin Valley indicates that the highest HI values are associated with more urbanized areas with denser populations. The HI values for Avenal and Kettleman City are among the lowest values for the San Joaquin Valley.

Modeled Diesel Exposure

NATA models ambient diesel particulate matter concentrations. Diesel exhaust emissions are a mixture of many constituents that also contribute to ambient concentrations of several criteria air pollutants including nitrogen oxides (NOx) and fine particles, as well as other air toxics. The potential increased cancer risk from diesel exhaust emissions is not addressed in the same way that other pollutants are. This is because US EPA has determined that data are not sufficient to develop a numerical estimate of carcinogenic potency (i.e., likely cancer risk) for this pollutant. However, a large number of human epidemiology studies show increased lung cancer associated with diesel exhaust. Furthermore, the exposures in these epidemiology studies have some overlap with the range of ambient exposures to diesel particulate matter throughout the United States. While exposure to diesel particulate matter poses a risk for lung cancer, there is a potential for non-cancer health effects as well, based on the contribution of diesel particulate matter to ambient levels of fine particles. Exposure to fine particles contributes to harmful respiratory effects (allergy and asthma symptoms), cardiovascular effects, and to premature mortality. More information on health effects associated with diesel exhaust appears in the Health Assessment Document for Diesel Exhaust.[51]

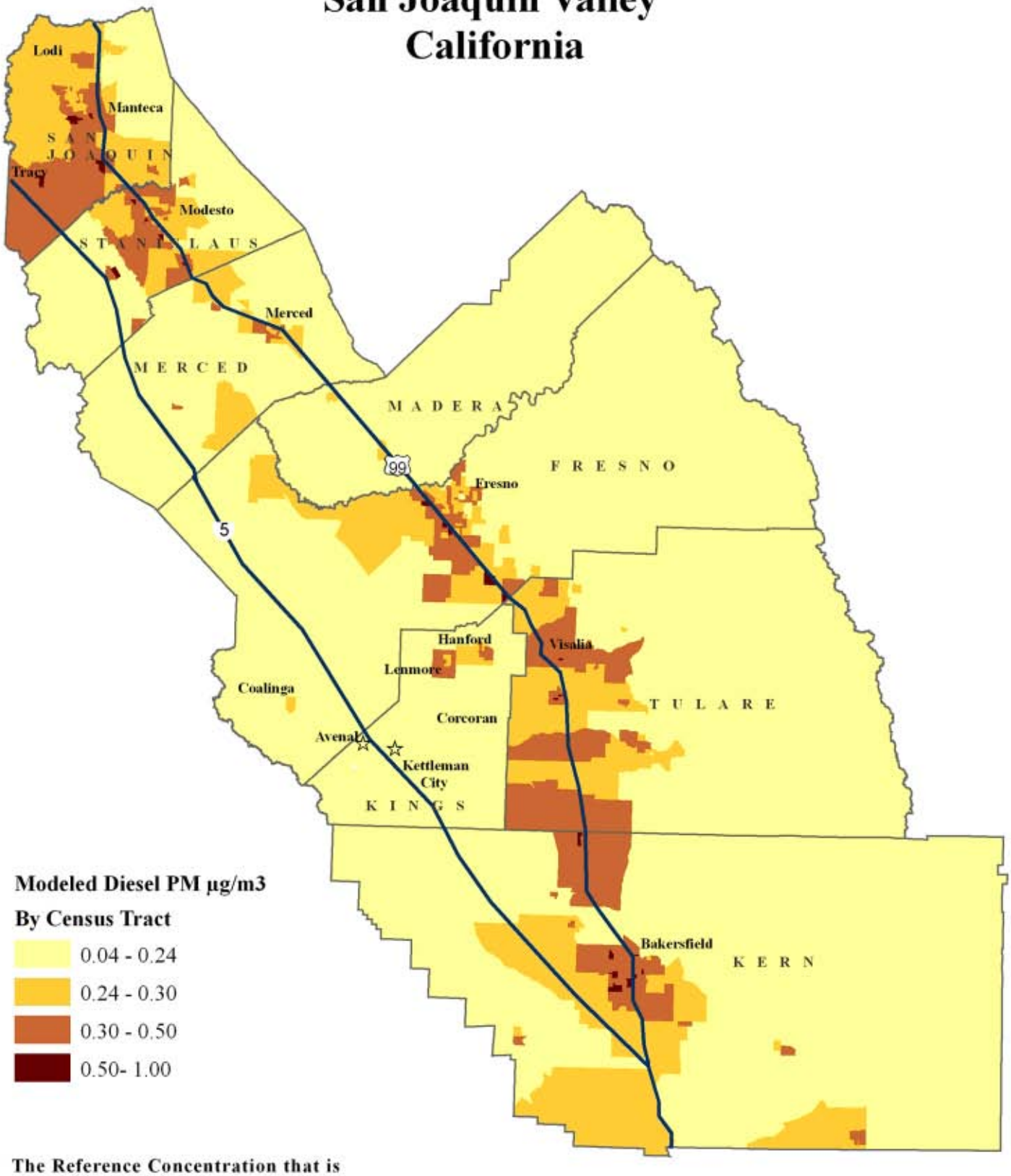
While the US EPA has not yet developed a numerical estimate of carcinogenic potency for diesel particulate matter, the Agency has developed an inhalation reference concentration (RfC) for effects other than cancer. The RfC of 5 ug/m^3 is the concentration of diesel particulate matter in air thought to be without adverse non-cancer effects even if a person is exposed continuously.[52] According to the modeled results of NATA, the outdoor air levels of diesel particulate matter in Kettleman City and Avenal are below the RfC concentration of 5 ug/m3. For purposes of estimating increased cancer risk from diesel particulate matter, a relative comparison is the best information available. The ambient air levels of diesel PM in Kettleman City and Avenal are among the lowest values for the San Joaquin Valley.

Modeled diesel emissions for the Southern San Joaquin Valley indicate that exposure to diesel emissions in the area of Kettleman City and Avenal is in the lowest category for the San Joaquin Valley.

[51] http://www.epa.gov/ttn/atw/dieselfinal.pdf
[52] http://www.epa.gov/ttn/atw/dieselfinal.pdf

Figure VI-C

EPA National-Scale Air Toxics Assessment
1999 Modeled Ambient Diesel PM Concentrations
San Joaquin Valley
California



The Reference Concentration that is used as a health benchmark protective of chronic non-cancer health effects is 5µg/m3.

C. Air Quality Conclusions

- *Both Avenal and Kettleman City have Hazard Index (HI) values above 1 for the indicator on air toxics non-cancer risks (based on the National Air Toxics Assessment). A value of the HI greater than 1 indicates that a potential may exist for adverse non-cancer health effects because the concentration exceeds the amount determined to have no adverse health effects. However, the distribution of HI values for the San Joaquin Valley indicates that the highest HI values are associated with more urbanized areas with denser populations. The HI values for Avenal and Kettleman City are among the lowest values for the San Joaquin Valley, thus US EPA finds no disproportionately high impacts for air toxics non-cancer endpoints.*

- *Although US EPA's National Air Toxics Assessment model did not show disproportionately high concentrations of diesel for the census tracts that contain Kettleman City and Avenal, the model is unable to identify diesel concentrations in the immediate vicinity of any specific source. As documented in the California Air Resources Board's Air Quality and Land Use Impacts Handbook,[53] local high-impact areas in a community are possible. Also, US EPA has not yet developed a numerical estimate of cancer potency for diesel. For these reasons, this analysis cannot conclude whether Kettleman City and Avenal experience either adverse or disproportionately high impacts from overall community-wide diesel emissions. However, based on the available information examined in this Refined Draft EJ Assessment, the communities in Kettleman City and Avenal do not appear to experience adverse impacts from the diesel emissions from KHF itself.*

- *The US EPA has designated the San Joaquin Valley a non-attainment area for PM2.5. Such a designation indicates that the San Joaquin Valley does not currently meet the PM2.5 National Ambient Air Quality Standards (NAAQS). Although San Joaquin Valley is also a non-attainment area for PM10, the PM10 levels did not violate the NAAQS levels from 2003 through 2005. Accordingly, on October 16, 2006, US EPA administratively determined, consistent with the Clean Air Act, that the area has attained the PM10 standards.[54] PM2.5 and PM10 modeling of impacts from KHF showed that the communities in Kettleman City and Avenal do not appear to experience adverse impacts resulting from the incremental PM10 and PM2.5 emissions from KHF. Based upon available data examined in this Refined Draft EJ Assessment, US EPA finds (1) a potential for adverse impact from PM2.5, (2) no adverse impact from PM10, and (3) no adverse impact from PM10 and PM2.5 emissions from KHF. In addition, US EPA found no basis to conclude that the PM2.5 air quality impacts are disproportionate compared with other parts of the San Joaquin Valley.*

- *The US EPA has designated the San Joaquin Valley a non-attainment area for ozone. Such a designation indicates that the San Joaquin Valley does not currently meet the ozone National Ambient Air Quality Standards (NAAQS). Based upon available data examined in this Refined Draft EJ Assessment, US EPA finds a potential for adverse impact from ozone. However, modeling of impacts from KHF showed that the communities in Kettleman City and Avenal do not appear to experience adverse ozone impacts resulting from the activities from KHF itself. In addition, US EPA found no basis to conclude that the ozone air quality impacts are disproportionate. Specifically, US EPA evaluated air monitoring data and found violations of ozone standards in multiple parts of the San Joaquin Valley, not just in the southwest part of the Valley where Kettleman City and Avenal are located.*

[53] Available at: http://www.arb.ca.gov/ch/handbook.pdf
[54] 71 Federal Register 63642, October 30, 2006

- *From Section III.X, the SEIR concludes that the cumulative projects (hazardous waste landfill at KHF, municipal waste landfill at KHF and bioreactor project at KHF) have a cumulatively significant impact on ozone, PM10 and PM2.5. However, air modeling of PM10 and PM2.5 showed that emissions from KHF activities do not contribute significantly to PM10 and PM2.5 concentrations in Kettleman City and Avenal. Thus, the communities in Kettleman City and Avenal do not suffer from adverse impacts resulting from the incremental PM10 and PM2.5 emissions from KHF.*

VI. DRINKING WATER QUALITY

Congress passed the Safe Drinking Water Act (SDWA) in 1974 to protect public health by regulating the nation's public drinking water supply and protecting sources of drinking water. SDWA is administered by the US EPA and its state partners.

A network of government agencies monitor tap water suppliers and enforce drinking water standards to ensure the safety of public water supplies. These agencies include US EPA, state departments of health and environment, and local public health departments.

Since 1999, water suppliers have been required to provide annual Consumer Confidence Reports to their customers. These reports are due by July 1 each year, and they contain information on contaminants found in the drinking water, possible health effects, and the water's source. Some Consumer Confidence Reports are available on the US EPA website.[55] Water suppliers must promptly inform consumers if their water has become contaminated by something that can cause immediate illness. Water suppliers have 24 hours to inform their customers of violations of US EPA standards "that have the potential to have serious adverse effects on human health as a result of short-term exposure." If such a violation occurs, the water system will announce it through the media, and must provide information about the potential adverse effects on human health, steps the system is taking to correct the violation, and the need to use alternative water supplies (such as boiled or bottled water) until the problem is corrected. Systems will inform customers about violations of less immediate concern in the first water bill sent after the violation, in a Consumer Confidence Report, or by mail within a year.

If you would like additional information about your drinking water, you can call the Safe Drinking Water Hotline toll free Monday through Friday, 7:00 am to 1:00 pm Pacific Time (except Federal holidays) at 1-800-426-4791 to answer your questions, or submit comments about local drinking water quality, drinking water standards, public drinking water systems, source water protection, large capacity residential septic systems, commercial and industrial septic systems, injection wells, and drainage wells.

For this Draft EJ Assessment, US EPA obtained information about drinking water violations for the water systems in Kettleman City and the City of Avenal. The Safe Drinking Water Information System (SDWIS) contains information about public water systems and their violations of US EPA's drinking water regulations, as reported to US EPA by the states.[56]

For analysis of this indicator, no simple method is available for comparing the data to a reference community because certain types of violations (such as exceedances of the drinking water standard) are more serious than other types (such as monitoring violations). In 2001, one out of every four community water systems did not conduct testing or report the results for all of the monitoring required to verify the safety of their drinking water. Although failure to monitor does not necessarily suggest safety problems, conducting the required reporting is crucial to ensure that problems will be detected. This analysis qualitatively analyzes the data and specifically discusses any health based violations.

[55] Information available at://*www.epa.gov/safewater/dwinfo.htm*
[56] Envirofacts at http://www.epa.gov/enviro/

The presence of contaminants does not necessarily indicate that the water poses a health risk. Maximum Contaminant Levels (MCLs) represent contaminant concentrations that US EPA deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime (70 years) at an exposure rate of 2 liters of water per day. For some chemicals, California has established its own MCL values, which are stricter than US EPA's MCL values.

A. History of Drinking Water Violations for Kettleman City

The water system for Kettleman City uses ground water. Violation history primarily consists of lapses in scheduled required sampling for coliform bacteria and a required test for copper and lead (1993) and a monthly MCL violation for total coliform (1998). In 1993-1995 multiple detections of benzene led to the addition of an air stripper treatment system in 1997. The air stripper was not installed immediately due to funding limits and the need to evaluate different treatment processes. During the period of detections, recorded benzene levels ranged from non-detect to 7 parts per billion (ppb). The State of California allows an MCL of 1 ppb, and the US EPA allows an MCL of 5 ppb. Detections of benzene have been found in ground water systems adjacent to oil fields. The western side of Kings County has many oil wells. Five oil wells are closer than one mile to the locations of the ground water wells. Kettleman City's source water assessment shows petroleum pipelines in the general vicinity of the community's wells. According to the data in SDWIS, Kettleman City has had no health based violations since 1998.

B. History of Drinking Water Violations for the City of Avenal

The water system for Avenal uses surface water from the California Aqueduct system. Violation history primarily consists of violations of the MCLs for total coliform and total trihalomethanes and failure to send annual water quality reports to the customers. Trihalomethanes (THMs) are a group of chemicals that are formed along with other disinfection byproducts when disinfectants containing chlorine used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. Between 1992 and 1995, Avenal recorded THM levels above the old standard of 100 ppb. The current standard is 80 ppb. In June, 2003, the annual four-quarter running average of total THMs exceeded the MCL of 80 ppb, and US EPA issued a compliance order to the City of Avenal. In September, 2003, the City of Avenal returned to compliance with the THM MCL by making adjustments to the amount of chlorine used to disinfect the water rather than by investing immediately in expensive infrastructure improvements. US EPA's compliance order for the THM violations is still open because lab problems have prevented the City of Avenal from being able to demonstrate that it can consistently meet the standards for THMs. The City of Avenal is working with an engineering consultant to select and build a long-term solution to the THM problem.

C. Drinking Water Quality Conclusions

- *This analysis finds no evidence of current adverse impact due to health-based drinking water quality violations in Kettleman City or Avenal.*

- *Although health-based violations in Kettleman City and Avenal have occurred in the past, the types and duration of the violations were not unusual for small drinking water systems, and thus US EPA finds no evidence of a disproportionately high impact from drinking water sources on these communities.*

VIII. PESTICIDE EXPOSURE

San Joaquin Valley is the most prolific farm belt in the United States. The leading industry in Kings County is agriculture. Thus, in evaluating environmental exposures for the communities of Kettleman City and Avenal, US EPA felt it important to look at pesticides and conduct a screening evaluation of potential exposures in these communities as compared with the rest of San Joaquin Valley.

A. California Department of Pesticide Regulation (DPR) Pesticide Use Reports (PUR)

Under the Pesticide Use Reports (PUR) program, all agricultural pesticide use must be reported monthly to the county agricultural commissioner, who in turn reports the data to the California Department of Pesticide Regulation (DPR). The reports must include the date and location (section, township, and range) where the application was made and detail the kind and amount of pesticides used. The PUR data is available on the internet.[57]

California has a broad legal definition of "agricultural use," so the reporting requirements include pesticide applications to parks, golf courses, cemeteries, rangeland, pastures, and along roadside and railroad rights-of-way. In addition, all post-harvest pesticide treatments of agricultural commodities must be reported, along with all pesticide treatments in poultry and fish production, as well as some livestock applications. The primary exceptions to the full use reporting requirements are home and garden use and most industrial and institutional uses. Structural pest control operators, professional gardeners, and other nonagricultural pest control operators have to report all pesticide use.

The PUR data is reported by township range and section that provides data that is accurate within one square mile.

US EPA reviewed California Pesticide Use Reporting (PUR) information and maps for the immediate (3-mile radius) areas around the central California communities of Kettleman City and Avenal. According to the PUR, from 2001-03, an average of 58,333 pounds of pesticides of were applied annually in the 3-mile radius around Kettleman City (Table VIII-A).

Table VIII-A: Reported Pesticide Use Kettleman City (3-mile radius) in pounds of active ingredient (2001-03).

2001	2002	2003
58,000	41,000	76,000

In particular, four one-square-mile areas known as "sections" show pesticide use that may have impacted the community of Kettleman City. These sections are located approximately one-half to two miles north/northwest of Kettleman City. During the growing season the predominant wind patterns are from the north/northwest. Pesticides used in these section include the pre-plant fumigants metam sodium and chloropicrin; organophosphate pesticides such as chlorpyrifos, diazinon, naled, and phorate; and carbamate pesticides, carbaryl, oxamyl, and benomyl. There are standing structures within one-half mile of the growing area.

Avenal

The data suggest only minimal impact from pesticides in the Avenal three-mile study area. The majority of pesticides reported used were herbicides to treat wheat and beans.

Kettleman City

Based on this review, six one-square mile sections show continued pesticide use that may have an impact on the community of Kettleman City. These sections, outlined in Table VIII-B, are located in the Kettleman City area.

[57] http://www.cdpr.ca.gov/docs/pur/purmain.htm

Table VIII-B: Pesticide Use 3-mile radius around Kettleman City (2001-03)						
Section	**Crops**	**Pesticides**	**2001**	**2002**	**2003**	**Path**
M2S18E12	Cotton, carrots	Paraquat dicofol, benomyl. Fumigant – metam sodium.	Y	Y	N	Upwind
M2S18E1	Cotton, tomato	OP/carbamate use – chlorpyrifos, phorate, naled, carbaryl. Fumigant use – chloropicrin.	Y	No reported use	Y Metam sodium	Upwind
M2S18E2	Cotton, tomato	OP/carbamate use – chlorpyrifos, ethephon, naled, methomyl. Fumigant – metam sodium.	Y Metam sodium	No reported use	Y Metam sodium	Upwind
M2S18E13	Melons, wheat, apricots, nectarines	OP/carbamate use (diazinon, carbaryl, oxamyl).	Y	Y	Y	Upwind
M2S19E20	Almonds	OP use – diazinon Propargite.	Y	Y	Low use	Downwind
M2S19E32	Cotton, grapes	OP use - ethephon, Carbofuran dicofol, methomyl paraquat.	Y	Y	Y	Downwind

The four sections highlighted are located north-northwest of Kettleman City, which is the predominate wind direction during the growing season. Therefore, the potential for exposures to these pesticides is greater than sections located downwind of Kettleman City. The main developed area of Kettleman City, which had an estimated population of 1,500 in 2000, is a residential area located downwind of carrot, cotton, and tomato fields in active agricultural production and separated only by two-lane road.

The pesticides selected for evaluation (column 3 in VIII-b) are the cholinesterase-inhibiting organophosphate and carbamate pesticides and the preplant soil fumigants metam sodium and chloropicrin, which appear to be used annually on tomatoes and carrots. These pesticides are toxic to the nervous system. The fumigants tend to move away from where they were applied. Therefore, determining the impacts to this community is difficult.

B. Pesticide Producer Establishments

Pesticide producer establishments are places where pesticides are manufactured or formulated. These facilities handle large quantities of pesticides and could pose a risk to nearby communities from spills, accidents, and/or emissions. To enforce the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), US EPA requires pesticide manufacturers and formulators to register as Producer Establishments. The US EPA performs inspections at registered establishments. Companies are required to report their production of pesticides to enable tracking of use and distribution of these chemicals. Agricultural establishments that store, handle, or use certain toxic or flammable chemicals *above threshold amounts* must develop and implement a program to prevent accidental releases of those chemicals. Companies that meet the criteria report releases to the Toxic Release Inventory (TRI) Program.

Data from 2001 show no Producer Establishments in the immediate area of Avenal and Kettleman City. However, the data does show three nearby Producer Establishments. One establishment is in Fresno County in Huron and two establishments are in Corcoran in Kings County. No reports of accidental releases for these establishments were reported from the National Response Center and

the State of California Office of Emergency Services. None of these establishments meets the threshold for reporting to the TRI program in 2001.

C. Pesticide Exposure Conclusions

The analysis of the Pesticide Use Report data identified potential concerns, but because actual exposure information is not available for this community, it could not be determined whether this community has experienced disproportionately high or adverse effects due to pesticides.

IX. ACCIDENTAL CHEMICAL RELEASES TO THE ENVIRONMENT

One of the issues raised by community members about KHF is the risk of community exposures due to spills or accidents. A study conducted by Elliot, et al., (2003)[58] found that facilities had more accidents when they were sited in minority and low-income communities. This Draft EJ Assessment evaluated both spills/accidents at KHF (reported in this section and in Section III) and spills/accidents in the local area. When spills or accidents involve hazardous materials, a facility must notify certain agencies about the incident and the response to the incident. Different agencies are notified depending on the types and quantities of hazardous materials that were released. Spill/accident data is collected and maintained at the federal (National Response System), state (Office of Emergency Services) and County (EPCRA) level. Each of these is described in detail below.

A. National Response System

The National Response System (NRS) is the federal government's mechanism for emergency response to discharges of oil and the release of chemicals into the navigable waters or environment of the United States and its territories. The NRS functions through a network of interagency and inter-government relationships that were formally established and described in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).[59]

The primary function of the National Response Center (NRC) is to serve as the sole national point of contact for reporting all oil, chemical, radiological, biological, and etiological (disease-related) discharges into the environment anywhere in the United States and its territories. In addition to gathering and distributing spill data for Federal On-Scene Coordinators and serving as the communications and operations center for the National Response Team, the NRC maintains agreements with a variety of federal entities to make additional notifications regarding incidents meeting established trigger criteria.

All releases of hazardous substances (including radionuclides) that exceed reportable quantities must be reported by the responsible party to the NRC. Title 40 of the Code of Federal Regulations Part 302 describes requirements related to reportable quantities (i.e. threshold quantities that trigger a requirement to report) and reporting criteria. Reportable quantities vary depending on the substance. Transportation accidents involving hazardous materials, including radioactive substances, must be reported to the NRC immediately by the carrier when, as a direct result of the materials, a person is killed; a person receives injuries requiring hospitalization; property damage exceeds $50,000; or fire, breakage, or spillage of an etiological material (i.e., material that could cause disease). Discharges from a hazardous waste treatment or storage facility must be reported by the emergency coordinator at the facility.

Data reported to the NRC are accessible to the public and available online.[60] Spill data for Kings County was examined for the period from 1990 to the present. In Kings County 126 spills were reported to the NRC system. 65 spill reports, more than one half of all spills in Kings County, were

[58] Elliot MR, Wang Y, Lowe RA, Kleindorfer PR. Environmental Justice: frequency and severity of US chemical industry accidents and the socioeconomic status of surrounding communities. J Epidemiol Community Health 2002: 58: 24-30.
[59] http://www.epa.gov/oilspill/ncpover.htm
[60] http://www.nrc.uscg.mil/nrcback.html

attributed to the area around Avenal and Kettleman City. 35 of these spill reports were associated with the KHF. Of the remaining 30 spill reports, 27 were associated with oil production in the area and 3 were due to equipment failure of Pacific Gas and Electric (PG&E) equipment.

Spills reports for the KHF typically involve small spills that were quickly contained. The majority of the small spills were associated with transport vehicles transferring hazardous materials at the facility. These spills did not involve any injuries or threat to the local community.

Ten of the spill reports document spills related to the operation of the KHF. The facility spills were small, involving leaks in tanks, valves, and during the use of equipment. All were promptly contained. On April 4, 1990, a fire was reported in a 55-gallon drum of unknown material and put out by smothering with dirt. The other reported spill that involved a release to the air was reported in April, 1995. Ammonia gas was released from a reaction during a stabilizing process in a stabilization unit. The release was considered to be less than the reportable quantity and was reported to be dissipated.

One of the reported spills possibly associated with the KHF occurred in April, 2000, and was located on Interstate 5, 12 miles south of Kettleman City. Interstate 5 was closed to allow hazardous response teams to clean up a waste mercaptan mixture that leaked from a drum on a truck trailer. Mercaptan is the sulfur compound used to add smell to natural gas. It is naturally occurring and not considered to be highly toxic.

B. State of California, Office of Emergency Services, Spill Release Reporting

The State of California, Office of Emergency Services (OES) maintains a database of Spill Release Reporting. For chemicals or oil, California laws may be more strict than federal laws by requiring reports of chemicals spills at lower quantities of chemicals and some oil. Thus the OES database may contain information on additional incidents that are not included in the NRS. Responsible parties must also provide follow-up reports for hazardous material releases to CA OES. The OES database is available on the internet.[61]

According to the OES database, no hazardous materials spills occurred in 2002 in Kings County. In 2003, three hazardous waste spills occurred in Kings County: (1) petroleum contaminated water was spilled in Hanford; (2) Amtrak struck a truck near Corcoran; and (3) a transformer failed and a substance was released near Hardwick Substation, Ave 12 and 3/4, Excelsior. In 2004, the most recent year for which data is available, two spills occurred in Kings County: (1) a farm vehicle struck a power pole, causing a release of oil near Corcoran; and (2) a diesel release from a traffic accident with diesel leaking from the saddle tank near Kettleman City.

C. Emergency Planning and Community Right-to-Know Act, Sections 311 and 312

The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) establishes requirements for Federal, State and local governments, Indian Tribes, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions help increase the public's knowledge and access to information on chemicals at individual facilities. EPCRA's primary purpose is to inform communities and citizens of chemical hazards in their areas. Sections 311 and 312 of EPCRA require businesses to report the locations and quantities of chemicals stored on-site to state and local governments in order to help communities prepare to respond to chemical spills and similar emergencies.[62] (Note: EPCRA, Section 313, the Toxic Release Inventory [TRI] program, is discussed separately in section V-A earlier in this Draft EJ Assessment.)

EPCRA requires reporting of hazmat chemical spills of reportable quantities to the National Response Center, the State Emergency Response Commissions, and local agencies. In Kings County, the local

[61] http://www.oes.ca.gov/Operational/OESHome.nsf/Content/2642671598689A0188256C2C00763702?OpenDocument
[62] http://www.epa.gov/tri/whatis.htm

agency designated to receive these reports is Kings County Department of Public Health, Division of Environmental Health Services.

EPCRA does not require the reporting of oil spills to the NRC or to jurisdictions, but the Oil Pollution Act does require reports of oil spills of reportable quantities to the NRC.

EPCRA requires facilities in Kings County to report releases of hazardous substances to Kings County if they exceed threshold quantities. EPCRA also specifies the information the must be included in the release report: chemical name, quantity released to the environment, time and duration of release, etc. EPCRA also requires facilities that use chemicals over certain quantities to submit annually an emergency and hazardous chemical inventory form. KHF submits this form annually to Kings County. EPCRA requires the information on hazardous substances released be made available to the public. The public can access this information by contacting Kings County Department of Public Health, Division of Environmental Health Services, at (559) 584-1411. Kings County has not received any reported releases of hazardous substances in the last three years.

D. Conclusions about Accidental Chemical Releases to the Environment

Because more spills occurred in the Kettleman City and Avenal area than the rest of the county, a disproportionate high exposure could have occurred. However, because none of these spills resulted in a release that affected nearby communities, US EPA concludes that these spills did not cause adverse impacts.

X. COMMUNITY HEALTH

According to the National Institute of Environmental Health, the poor have worse health than other population groups, based on indicators including the following: shorter life expectancy; higher cancer rates; more birth defects; greater infant mortality; and higher incidence of asthma, diabetes, and cardiovascular disease. The ways in which poverty creates these health disparities is not well understood. Some racial groups can have a higher incidence of some health problems, such as asthma. Evidence is increasing that these groups are burdened with a disproportionate share of residential and occupational exposure to toxic substances such as lead, PCBs, wood dusts, and air pollutants. Thus environmental exposures represent an important area of investigation for understanding the health disparities suffered by the disadvantaged of this nation.[63] In addition the same level of environmental exposure can have a greater impact on populations with higher vulnerability factors such as health care shortage, high percentage of young or elderly, existing health conditions, nutritional deficiencies, lack of access to health information, etc.

For this Draft EJ Assessment, US EPA obtained information on access to health care, vital statistics, cancer, asthma, low birth weight, elevated blood lead levels and birth defects for the communities of Kettleman City and Avenal. In every case, US EPA attempted to obtain health data at the community level. For some health outcomes, only county average data was available. County-average data is too large in scale and does not allow for an analysis of the health status of Kettleman City and Avenal. Although county-level data does not provide sufficient information for comparing Kettleman City and Avenal to reference communities, this Draft EJ Assessment provides it because it is the only information available.

A. Health Effects of Living Near Hazardous Waste Landfill Sites

In 2000, Martine Vrijheid published "Health Effects of Residence near Hazardous Waste Landfill Sites: A Review of Epidemiologic Literature.[64]" This article surveys many articles in the current epidemiologic literature on health effects in relation to residence near landfill sites. This study explains

[63] National Institute of Environmental Health Sciences. http://www.niehs.nih.gov/external/resinits/ri-2.htm
[64] Available online at: *http://ehpnet1.niehs.nih.gov/docs/2000/suppl-1/101-112vrijheid/abstract.html*

that if real risks associated with landfills exist, many factors make that connection difficult to establish scientifically. Nevertheless, it concludes that studies still "may indicate real risks associated with residence near landfill sites." Excerpts from the article appear below. A longer excerpt appears in Appendix D.

> *A general problem in epidemiologic studies of landfill sites … is that there is insufficient information regarding potential human exposures from landfill sites. . . . [V]ery few have been evaluated with respect to both the types of chemicals they contain and the extent to which they may be releasing chemicals. Moreover, . . . we know very little about the extent to which residents living near a site are exposed to these chemicals. A few studies that have attempted to measure certain chemicals in blood and urine of populations near waste sites have generally not found increased levels of volatile organic compounds (VOCs), mercury, or PCBs. . . .*
>
> *"In addition, . . . if residential populations are exposed to chemicals from landfill sites, it will generally be to low doses of mixtures of chemicals over long periods of time. Associations with such low-level environmental exposures in the general population are by their nature hard to establish. . . .*
>
> *"A general problem in studies of cancer incidence is the long latency period between exposure and clinical manifestation of the cancer. Studies may not always allow for a long enough latency period, which reduces their power to pick up long-term effects. Moreover, . . . a considerable number of people may have migrated into or out of the exposed areas . . . , which will lead to misclassification of exposures. . . . [I]n single-site studies . . . the size of populations living near waste sites generally is small and, especially when the outcome is a rare disease, this can seriously limit the statistical power of an investigation. . . .*
>
> *"From this review we can conclude that increases in risk of adverse health effects have been reported near individual landfill sites and in some multisite studies. Although biases and confounding factors cannot be excluded as explanations for these findings, the findings may indicate real risks associated with residence near certain landfill sites."*

B. Medically Underserved Area/Health Professional Shortage Area

Both Kettleman City and Avenal are designated as Medically Underserved Areas (MUAs) by the US Department of Health and Human Services, Health Resources and Service Administration, Bureau of Primary Health Care.[65] This information is important to this Draft EJ Assessment because it is an indicator that the community of concern is potentially more vulnerable to environmental stressors than the reference community.

Federal health professional shortage area designations are used to target several millions of dollars in federal resources to improve access to health care in underserved areas. There are two types of Federal shortage area designations: Health Professional Shortage Areas (HPSA) and Medically Underserved Areas/Medically Underserved Populations (MUAs/MUPs).

An area is designated as an MUA/MUP based on whether an area exceeds a score for an Index of Medical Underserviced (IMU). The IMU is an index value based on infant mortality rate, poverty rates, and percentages of elderly and ratios of primary care physicians to population. Similar to HPSA designations, an area (MUA) or a population (MUP) may be designated.

[65] http://bphc.hrsa.gov/databases/newmua/

MUA designation involves the application of the IMU to data on a service area to obtain a score for the area. The IMU scale is from 0 to 100, where 0 represents completely underserved and 100 represents best served or least underserved. Under the designation criteria, service areas found to have an IMU of 62.0 or less qualify for MUA designation. The score for Avenal is 59.2. The score for Kettleman City is 59.3.

The IMU involves four variables: the ratio of primary medical care physicians per 1,000 population, infant mortality rate, the percentage of the population with incomes below the poverty level, and the percentage of the population age 65 or over. The value of each of these variables for the service area is converted to a weighted value, according to established criteria. The four values are added together to get the area's IMU score.

In addition, Kettleman City and Avenal are both designated as Health Professional Shortage Areas.

C. Kings County Health Status Profile

The California Department of Health Services, Center for Health Statistics produces a yearly "County Health Status Profile."[4] Table X-A on the following page lists health status indicators for Kings County. The mortality rate from motor vehicle accidents is more than twice the State average, and this difference is statistically significant. The mortality rate from unintentional injuries is also higher than the state average, and this difference is statistically significant. Also, the mortality rate due to diabetes is the highest in all of California. In addition, the "all cause" mortality rate (this includes all deaths, regardless of the cause) is higher than the State average. Cancer rates are not elevated. Infant mortality rates are unreliable due to small numbers. The rate of low birthweights is not elevated.

[66] http://www.dhs.ca.gov/hisp/chs/PHweek/CProfile2004/CProfileExcel2004.htm

Table X-A

KINGS COUNTY'S HEALTH STATUS PROFILE FOR 2004

MORTALITY

RANK ORDER	HEALTH STATUS INDICATOR	2000-2002 DEATHS (AVERAGE)	CRUDE DEATH RATE	AGE-ADJUSTED DEATH RATE	95% CONFIDENCE LIMITS LOWER	95% CONFIDENCE LIMITS UPPER	STATEWIDE AGE-ADJUSTED DEATH RATE	NATIONAL OBJECTIVE
41	ALL CAUSES (2000-2002 AVERAGE)	714.0	551.9	802.8	743.1	862.5	745.0	N/E
50	MOTOR VEHICLE ACCIDENTS	28.7	22.2	23.4	14.6	32.2	11.1	9.2
35	UNINTENTIONAL INJURIES	49.7	38.4	42.4	30.2	54.6	27.6	17.5
5	FIREARM INJURIES	6.3	4.9 *	4.8 *	0.9	8.7	9.5	4.1
28	HOMICIDE	5.0	3.9 *	3.9 *	0.3	7.4	6.5	3.0
13	SUICIDE	10.7	8.2 *	8.7 *	3.3	14.1	9.5	5.0
18	ALL CANCERS	142.7	110.3	166.1	138.7	193.5	172.7	159.9
19	LUNG CANCER	37.7	29.1	44.3	30.1	58.6	44.8	44.9
11	FEMALE BREAST CANCER	9.3	15.9 *	19.9 *	7.1	32.8	24.1	22.3
45	CORONARY HEART DISEASE	153.3	118.5	182.9	153.9	212.0	186.0	166.0
29	CEREBROVASCULAR DISEASE	47.0	36.3	56.3	40.1	72.4	58.9	48.0
21	DRUG-INDUCED DEATHS	8.7	6.7 *	7.8 *	2.5	13.1	8.6	1.0
58	DIABETES	44.7	34.5	52.0	36.6	67.3	21.0	N/A[1]

MORBIDITY

RANK ORDER	HEALTH STATUS INDICATOR	2000-2002 CASES (AVERAGE)	CRUDE CASE RATE	95% CONFIDENCE LIMITS LOWER	95% CONFIDENCE LIMITS UPPER	STATEWIDE CRUDE CASE RATE	NATIONAL OBJECTIVE
38	HEPATITIS C INCIDENCE	0.33	0.26 *	0.00	1.13	0.27	1.00
32	AIDS INCIDENCE (AGE 13 AND OVER)	7.33	7.35 *	2.03	12.67	15.23	1.00
36	TUBERCULOSIS INCIDENCE	8.00	6.18 *	1.90	10.47	9.27	1.00
53	CHLAMYDIA INCIDENCE	480.00	371.01	337.82	404.21	291.09	N/A
47	SYPHILIS INCIDENCE	1.33	1.03 *	0.00	2.78	1.81	0.20
19	MEASLES INCIDENCE	0.00	0.00 +	-	-	0.06	0.00

INFANT DEATH

RANK ORDER	HEALTH STATUS INDICATOR	1999-2001 DEATHS (AVERAGE)	BIRTH COHORT INFANT DEATH RATE	95% CONFIDENCE LIMITS LOWER	95% CONFIDENCE LIMITS UPPER	STATEWIDE BIRTH COHORT INFANT DEATH RATE	NATIONAL OBJECTIVE
40	INFANT DEATHS: ALL RACES	12.7	5.9 *	2.6	9.1	5.5	4.5
2	INFANT DEATHS: ASIAN/OTHER	0.0	0.0 +	-	-	4.7	N/E
53	INFANT DEATHS: BLACK	1.7	15.1 *	0.0	38.0	11.9	N/E
48	INFANT DEATHS: HISPANIC	7.7	6.5 *	1.9	11.1	5.2	N/E
26	INFANT DEATHS: WHITE	3.3	4.4 *	0.0	9.1	4.9	N/E

NATALITY

RANK ORDER	HEALTH STATUS INDICATOR	2000-2002 BIRTHS (AVERAGE)	PERCENT	95% CONFIDENCE LIMITS LOWER	95% CONFIDENCE LIMITS UPPER	STATEWIDE PERCENT	NATIONAL OBJECTIVE
31	LOW BIRTHWEIGHT INFANTS	131.0	5.9	4.9	7.0	6.3	5.0
45	LATE OR NO PRENATAL CARE	553.0	25.1	23.0	27.2	14.5	10.0
35	ADEQUATE/ADEQUATE PLUS CARE	1,573.7	71.6	68.1	75.2	76.9	90.0

RANK ORDER	HEALTH STATUS INDICATOR	2000-2002 BIRTHS (AVERAGE)	AGE-SPECIFIC BIRTH RATE	95% CONFIDENCE LIMITS LOWER	95% CONFIDENCE LIMITS UPPER	STATEWIDE AGE-SPECIFIC BIRTH RATE	NATIONAL OBJECTIVE
56	BIRTHS TO MOTHERS AGED 15-19	347.0	73.9	66.2	81.7	45.0	N/E

BREASTFEEDING

RANK ORDER	HEALTH STATUS INDICATOR	2000-2002 BIRTHS (AVERAGE)	PERCENT	95% CONFIDENCE LIMITS LOWER	95% CONFIDENCE LIMITS UPPER	STATEWIDE PERCENT	NATIONAL OBJECTIVE
58	BREASTFEEDING INITIATION	1,262.3	70.7	66.8	74.6	82.8	75.0

CENSUS

RANK ORDER	HEALTH STATUS INDICATOR	2000 NUMBER	PERCENT	95% CONFIDENCE LIMITS LOWER	95% CONFIDENCE LIMITS UPPER	STATEWIDE PERCENT	NATIONAL OBJECTIVE
47	PERSONS UNDER 18 IN POVERTY	9,705.0	25.0	24.5	25.5	18.0	N/E

N/E: National Objective for the Year 2010 has not been established.

N/A: Prevalence data is not available in California.

N/A1: National Objective is based on both underlying and contributing cause of death which requires use of multiple cause of death data files. These data exclude multiple/contributing causes of death.

* Rate or percent unreliable; relative standard error greater than or equal to 23%.

\+ Rate or percent indeterminate; no (zero) events.

\- Upper and lower limits at the 95% confidence level are not calculated for no (zero) events.

Note: Crude death rates, crude case rates, and age-adjusted death rates are per 100,000 population. Birth cohort infant death rates are per 1,000 live births. Age-specific birth rates are per 1,000 population.

Sources: Department of Health Services: Center for Health Statistics, Birth and Death Statistical Master Files, 2000-2002, and Birth Cohort Files, 1999-2001; Division of Communicable Disease Control, Office of Statistics and Surveillance; Office of AIDS, AIDS Case Registry; Genetic Disease Branch, Newborn Screening Program.

Department of Finance: 2001 Population Estimates with Age , Sex and Race/Ethnic Detail, December 1998; State Census Data Center, Census 2000, Summary Tape File 3, P87.

D. Cancer

The Cancer Registry of Central California conducted an evaluation of cancer incidence patterns in the communities of Kettleman City and Avenal[67]. Between 1988 and 2001, a total of 20 residents of Kettleman City had been diagnosed with an invasive cancer. Although every case of cancer is tragic, this number does not indicate that Kettleman City experienced any excess of cancer beyond the state average rate during this time period. If the incidence rate of cancer in Hispanics throughout the state of California were applied to the population at risk in Kettleman City we would expect to see about 2.4 cancer cases per year. The registry shows between 0 and 3 cancers have been observed there each year.

In the City of Avenal a total of 261 invasive cancers were diagnosed between 1988 and 2001. This figure is quite a bit larger than the figure for Kettleman City because the population at risk (nearly 15,000) is considerably larger than in Kettleman City. Nevertheless, there is no indication that the number of cancers in Avenal between 1988 and 2001 exceeds the state average. Whereas we would expect to see about 24 new cancer cases per year, there have been between 8 and 28 cancer cases diagnosed per year in Avenal. There is no indication that the number of cancers in Kettleman City or Avenal between 1988 and exceed the state average levels.

Note that some health outcomes like cancer typically require years to develop. Cancer registries typically include the type of cancer diagnosed and an individual's current address, but they do not include the length of time the individual has resided in an area. For this reason, an effect that may be evident in long-time residents of an area will be difficult to track if those long-time residents now only represent a fraction of the local population. Furthermore, as discussed in more detail in the birth defects section, it is difficult for evaluations of small communities to detect the effects of carcinogens (cancer-causing chemicals) unless it is a very potent carcinogen.

E. Asthma Hospitalization Rates

In California, the California Department of Health Services California Breathing Program conducts ongoing collection, analysis and interpretation of asthma-related data. Hospitalization rates are not indicators of asthma prevalence or current asthma. Asthma is a chronic disorder that can have different degrees of severity. Hospitalization rates measure only an infrequent, severe outcome of this disorder. US EPA requested asthma hospitalization rate data from the California Breathing Program for the zip codes 93239 (which contains Kettleman City) and 93204 (which contains Avenal) because this is the only asthma data at the community level that US EPA could easily obtain and the only asthma data that is tracked on a statewide basis. More information about how this data was collected appears in the California County Asthma Hospitalization Chart Book (2003).[68]

Table X-b shows the data for Kettleman City and Avenal. Note that to maintain confidentiality of persons hospitalized, counts are not provided if less than five cases occur. Also, crude rates are not calculated if the total count in the zip code is less than 30. The crude rate is the number of cases per 100,000 population. The crude rate should not be used for making comparisons between different populations when the age, race, and sex distributions of the populations are different. When the crude rate is modified to take into account the age of an individual or group of individuals this modified rate is called an age-adjusted rate. An age-adjusted rate should be calculated before comparing to other groups. Because of the small population sizes in these communities, it is not possible to calculate age-adjusted asthma hospitalization rates in order to compare it to the statewide average. In Avenal, it should be noted that the number of cases has declined from 26-34 cases per year in 1990-1993 to less than 18 cases per year from 1994-2002. The reason for this decline is unknown.

[67] Letter from Paul Mills, Epidemiologist, Cancer Registry of Central California to Debbie Lowe, US EPA, dated April 29, 2004.
[68] http://www.ehib.org/cma/papers/Hosp_Cht_Book_2003.pdf

Table X-B: Asthma Hospitalizations				
	93204 Avenal		93239 Kettleman	
Year	Number of asthma hospitalizations	Crude Annual Rate	Number of asthma hospitalizations	Crude Annual Rate
1990	33	33.39	< 5	**
1991	34	34.41	< 5	**
1992	26	**	*	**
1993	31	31.37	< 5	**
1994	18	**	< 5	**
1995	15	**	< 5	**
1996	11	**	< 5	**
1997	15	**	< 5	**
1998	9	**	*	**
1999	13	**	*	**
2000	7	**	< 5	**
2001	< 5	**	< 5	**
2002	12	**	*	**

California Age-Adjusted Rate for 2002: 10.19 per 10,000 hospitalizations.
**Rate not presented if the number of cases was less than 30.

Because it is not possible to compare asthma hospitalization rates for these communities with the state average, US EPA evaluated the asthma hospitalization rates in Kings County. In California, the age-adjusted asthma hospitalization rate for 1998 - 2000 is 11.11 per 10,000. In Kings County, the age-adjusted asthma hospitalization rate exceeds the California average (14.13 cases per 10,000 people), and the difference is statistically significant. Also, in Kings County, the asthma hospitalization rate for Hispanics (17.76 per 10,000) exceeds the California rate for Hispanics (10.25 per 10,000). This difference is also statistically significant. The rate for Kings County is provided for informational purposes only. The rate for Kings County does not allow for an analysis of this EJ indicator to determine the whether the rates in Kettleman City and Avenal exceed the rates in the reference community.

F. Low Birth Weight

The California Department of Health Services produced "The Atlas of Low Birth Weights in California,"[69] which analyzed data from 1995 to 1998. Although a few cases of low birth weight births occurred in Kettleman City and Avenal, the overall rates were not higher than the state average. More recent data for Kettleman City and Avenal were not available. The Kings County Health Status Profile compared the percentage of low birth weight babies in Kings County with the state average, and the rate was not statistically greater. However, the rate for Kings County does not provide information about the rates in Kettleman City and Avenal, which could be higher or lower than the rate for Kings County.

[69] http://www.mch.dhs.ca.gov/documents/pdf/lbw1-501.pdf

G. Lead

US EPA obtained data on elevated blood lead levels (EBLs) from the State of California Department of Health Services. Table X-C shows these data.

More cases of elevated blood lead levels were reported in 2003 in most zip codes as compared with previous years. This is due to a change in the universal reporting regulations. Before 2003, labs were only required to report BLLs of 25 micrograms per deciliter (mg/dL) and above, although most reported levels of 15 mg/dL and above. The State was not receiving the majority of reports between 10 and 14 mg/dL before January, 2003. The 2004 data is partial year, only representing cases as of March 12, 2004.

Table X-C: Kings County - Children With Elevated Blood Lead Levels, By Year*
Prevalence of EBLL in Kings County by zip code. Individual children may be counted in more than one year.

	Zip Code							
Year	93202	93204 Avenal	93212	93230	93239 Kettleman City	93245	93656	Total
1992	0	1	0	2	0	1	0	4
1993	0	0	0	2	0	0	0	2
1994	0	0	1	3	0	1	0	5
1995	0	4	1	4	0	0	0	9
1996	0	3	2	2	1	0	1	9
1997	0	0	1	1	5	0	0	7
1998	0	0	1	0	1	0	0	2
1999	1	0	3	1	1	0	0	6
2000	1	0	3	3	1	0	0	8
2001	1	1	0	5	1	1	0	9
2002	0	2	1	3	1	0	0	7
2003	1	4	1	11	4	1	0	22
2004	0	0	0	1	1	0	0	2
Total	4	15	14	38	16	4	1	92
#Children**	260	925	1,202	4,421	171	3,217	509	10,705

*Preliminary data from state RASSCLE database, updated 3/12/2004. Data are not complete but are updated as new information becomes available.

**Total number of children under age 5 living in those zip codes, from Year 2000 Census.

The number of cases of elevated blood lead appear to be high in Kettleman City relative to the number of children who live there. US EPA consulted with the Kings County Childhood Lead Poisoning Prevention Program.[70] This program provided information that showed that cases of elevated blood lead in Kings County are associated with children who have recently moved to Kings County. Thus, these children were exposed elsewhere, and then moved to Kings County where they were then diagnosed with elevated blood lead. Therefore, environmental exposures within Kings County do not appear to be causing the elevated blood lead levels.

[70] Information on how to contact the County Childhood Lead Poisoning Prevention Program can be found at: http://www.dhs.ca.gov/childlead/html/POclpppC.html#clpppC

H. Birth Defects

US EPA attempted to obtain data on birth defects in these communities. US EPA contacted the Director of the California Birth Defects Monitoring Program.[71] While the California Birth Defects Monitoring Program does maintain information about birth defects in Kettleman City and Avenal, after consulting with the Director and explaining the purpose and scope of the Draft EJ Assessment and the size of the communities in Kettleman City and Avenal, the Director advised US EPA that birth defects data would not be useful in this situation. Both of these communities are relatively small (Kettleman City has less than 50 births per year, Avenal less than 200 births per year). The rate of birth defects in California is about 3%, so we would expect less than 2 cases of birth defects per year in Kettleman City, and less than 6 birth defects per year in Avenal. These numbers are too small to be able to see a statistically significant difference between observed cases and expected cases. In order to conduct an effective study of birth defects, the Director explained that a large population size (thousands of births) is needed. Teratogens are substances that cause birth defects. The teratogens that have been discovered through cluster investigations have all been potent and therefore caused large increases in birth defects. For example, the rate of limb defects in babies prenatally exposed to thalidomide was 240 times the expected rate. Scientists assume subtle teratogens could cause less dramatic increases. The less potent the teratogen, the more cases needed to verify an association. Cluster reports usually do not contain enough cases to discover an association between a mild teratogen and a birth defect. Experience shows that if a teratogen increases the occurrence of a defect 10 times or more over the expected rate, a cluster investigation may be able to detect an association. A cluster investigation cannot detect a teratogen causing a lesser increase. Only large epidemiologic studies evaluating hundreds or even thousands of pregnancies are likely to detect these mild teratogens.

The California Birth Defects Monitoring Program conducted an investigation of neural tube defects in Kern County: Buttonwillow area cluster investigation.[72] In May 1993, the California Birth Defects Monitoring Program received reports of community concerns regarding neural tube defects – 3 affected babies were born over 8 months in 1992-1993 in the Kern County towns of Buttonwillow and Wasco. The community suspected the nearby hazardous waste site was related to these cases; in particular, they were worried about xylene and toluene, two solvents found at the facility. Subsequent investigation focused on Buttonwillow, where all three mothers were thought to have lived in early pregnancy, and brought forth concerns about hazardous waste-laden trucks passing through town. One of the three cases was dropped from the study because the mother did not live in Buttonwillow during her pregnancy. With 60 births per year in Buttonwillow, we statistically expect 0-1 cases of neural tube defects in any given year. Two cases occurring in 1992 is 25 times higher than expected. The investigation found no environmental exposures that explained the excess. There was no evidence linking the cases to the hazardous waste site or to the trucking of hazardous waste to the site. Overall birth defects data from 1987 to 1991 suggest no long term birth defects problems in Buttonwillow. The excess of neural tube defects seen in 1992 could be due to chance or could be the result of an undetected environmental exposure.

I. Community Health Conclusions

- *The US Department of Health and Human Services has designated Kettleman City and Avenal as Medically Underserved Areas and Health Professional Shortage Areas.[73] The residents in these communities may have less access to health care when compared with the general population. Lack of access to health care means these communities are potentially more vulnerable to environmental impacts.*

- *After reviewing the health data for Kettleman City and Avenal, US EPA cannot develop a conclusion about whether health impacts are disproportionately high or adverse for two reasons: (1) the small size of these communities makes detecting statistically significant increases or decreases*

[71] More information about the California Birth Defects Monitoring Program can be found here: http://www.cbdmp.org/
[72] A fact sheet summarizing this study is available at: http://www.cbdmp.org/pdf/buttonwillow.pdf
[73] More information on these designations can be found at: http://bhpr.hrsa.gov/shortage/

in disease rates difficult and (2) for many data sources, only county level data is available, and the rates for Kettleman City and Avenal could be higher or lower than the county's rate.

XI. FINDINGS

The EJ indicators examined in this Refined Draft EJ Assessment provided a broad picture of the community's environmental, social, economic, and public health conditions. While some of these indicators relate directly to PCB-activities at the KHF facility, many of them are not directly related to such activity. Nevertheless, the Draft EJ Assessment examined these other factors because they help describe the context for the pending TSCA permit application by providing a comprehensive picture of the communities' economic, social, environmental, and health conditions. Though TSCA permitting regulations provide limited legal authority to address issues that are not directly related to handling PCBs, these factors are important to demonstrate the potential increased community susceptibility to any potential impacts of PCB activities and to highlight potential barriers to meaningful public participation that US EPA should address.

As set forth in the Toolkit, to evaluate whether a "disproportionately high" impact is present, an analysis must define a community of concern and a reference community with which to compare it. In this case, the communities of concern are Kettleman City and Avenal. US EPA chose these two communities because of their proximity to KHF. For convenience, US EPA will refer to both as the "community of concern" or "community" and to each individually by name. The reference community US EPA chose was dependent on the data available for each indicator, but generally it was the surrounding county, region or State. To determine whether there has also been an "adverse" impact, US EPA compared the indicator values to established benchmarks, such as the National Ambient Air Quality Standards. In addition, to evaluate the potential adverse impacts from KHF, US EPA evaluated facility-specific data and risk assessment information.

Based on the Toolkit methodology, US EPA's findings for each of the four categories of indicators is summarized below.

Environmental

The following table summarizes the findings for the environmental indicators. In no case did this Draft EJ Assessment find a potentially adverse impact due to KHF. For three indicators (Air toxics non-cancer hazard, particulate matter, and ozone), however, the Draft EJ Assessment found an overall potential adverse impact due to activities unrelated to KHF. For two indicators, the finding of an overall potential adverse impact was inconclusive. Five indicators showed a potential for a disproportionate impact; however, for each of these indicators the Draft EJ Assessment did not find an adverse impact.

Table XI-A: Environmental Indicators Findings				
Environmental Indicators	**Overall Potentially Disproportionate**	**Overall Potentially Adverse**	**Potentially Adverse due to KHF**	**Overall Potentially Disproportionate and Adverse**
Density of environmentally-regulated facilities	No	No	N/A	No
Superfund sites	No	No	N/A	No
RCRA	No	No	No	No
municipal solid waste landfills	Yes	No	No	No
hazardous waste landfills	Yes	No	No	No
TRI	Yes	No	No	No
RSEI	Yes	No	No	No
Air toxics (NATA)	No	No	No	No
Air toxics non-cancer NATA	No	Yes	No	No
Diesel NATA	Inconclusive	Inconclusive	No	Inconclusive
Air quality – particulate matter	No	Yes	No	No
Air quality – ozone	No	Yes	No	No
Drinking water quality	No	No	No	No
Pesticide use	Inconclusive	Inconclusive	No	Inconclusive
Pesticide producer establishment locations	No	No	N/A	No
Spills of chemicals or hazardous waste	Yes	No	No	No
Inspections	No*	N/A	No	No
Violations	No*	N/A	No	No
Formal enforcement actions	No*	N/A	No	No

*For the compliance indicators, the analysis compares KHF with other PCB disposal sites in the nation.

For the five indicators that showed a potential for disproportionate impact but no adverse impact, because the Draft EJ Assessment found no health impacts associated with these indicators, this Findings section does not contain a detailed description of these indicators, but previous sections of the Draft EJ Assessment contains the details. Because community residents are likely to be interested in more detailed information for the indicators that show a potential for adverse impact, below is a summary of the findings for each of these indicators.

- Both Avenal and Kettleman City have Hazard Index (HI) values above 1 for the indicator on air toxics non-cancer risks (based on the National Air Toxics Assessment). A value of the HI greater than 1 indicates that a potential may exist for adverse non-cancer health effects because the concentration exceeds the amount determined to have no adverse health effects. However, the distribution of HI values for the San Joaquin Valley indicates that the highest HI values are associated with more urbanized areas with denser populations. The HI values for Avenal and Kettleman City are among the lowest values for the San Joaquin Valley, thus US EPA finds no disproportionately high impacts for air toxics non-cancer endpoints.

- Although US EPA's National Air Toxics Assessment model did not show disproportionately high concentrations of diesel for the census tracts that contain Kettleman City and Avenal, the model is unable to identify diesel concentrations in the immediate vicinity of any specific source. As documented in the California Air Resources Board's *Air Quality and Land Use Impacts Handbook*,[74] local high-impact areas in a community are possible. Also, US EPA has not yet developed a numerical estimate of cancer potency for diesel. For these reasons, this analysis cannot conclude whether Kettleman City and Avenal experience either adverse or disproportionately high impacts from overall community-wide diesel emissions. However, based on the available information examined in this Refined Draft EJ Assessment, the communities in Kettleman City and Avenal do not appear to experience adverse impacts from the diesel emissions from KHF itself.

- The US EPA has designated the San Joaquin Valley a non-attainment area for PM2.5. Such a designation indicates that the San Joaquin Valley does not currently meet the PM2.5 National Ambient Air Quality Standards (NAAQS). Although San Joaquin Valley is also a non-attainment area for PM10, the PM10 levels did not violate the NAAQS levels from 2003 through 2005. Accordingly, on October 16, 2006, US EPA administratively determined, consistent with the Clean Air Act, that the area has attained the PM10 standards.[75] PM2.5 and PM10 modeling of impacts from KHF showed that the communities in Kettleman City and Avenal do not appear to experience adverse impacts resulting from the incremental PM10 and PM2.5 emissions from KHF. Based upon available data examined in this Refined Draft EJ Assessment, US EPA finds (1) a potential for adverse impact from PM2.5, (2) no adverse impact from PM10, and (3) no adverse impact from PM10 and PM2.5 emissions from KHF. In addition, US EPA found no basis to conclude that the PM2.5 air quality impacts are disproportionate compared with other parts of the San Joaquin Valley.

- The US EPA has designated the San Joaquin Valley a non-attainment area for ozone. Such a designation indicates that the San Joaquin Valley does not currently meet the ozone National Ambient Air Quality Standards (NAAQS). Based upon available data examined in this Refined Draft EJ Assessment, US EPA finds a potential for adverse impact from ozone. However, modeling of impacts from KHF showed that the communities in Kettleman City and Avenal do not appear to experience adverse ozone impacts resulting from the activities from KHF itself. In addition, US EPA found no basis to conclude that the ozone air quality impacts are disproportionate. Specifically, US EPA evaluated air monitoring data and found violations of ozone standards in multiple parts of the San Joaquin Valley, not just in the southwest part of the Valley where Kettleman City and Avenal are located.

[74] Available at: http://www.arb.ca.gov/ch/handbook.pdf
[75] 71 Federal Register 63642, October 30, 2006.

- The analysis of Pesticide Use Report data identified potential concerns, but because actual exposure information is not available for this community, US EPA could not determine whether this community has experienced disproportionately high or adverse effects due to pesticides.

Community Health

The US Department of Health and Human Services has designated Kettleman City and Avenal as Medically Underserved Areas and Health Professional Shortage Areas.[76] The residents in these communities may have less access to health care when compared with the general population. Lack of access to health care means these communities are potentially more vulnerable to environmental impacts. After reviewing the health data for Kettleman City and Avenal, US EPA cannot develop a conclusion about whether health impacts are disproportionately high or adverse for two reasons: (1) the small size of these communities makes detecting statistically significant increases or decreases in disease rates difficult and (2) for many data sources, only county level data is available, and the rates for Kettleman City and Avenal could be higher or lower than the county's rate.

Economic and Social

Analysis of the economic and social indicators shows that Kettleman City and Avenal are low-income and minority communities. Many of the community residents speak Spanish.

XII. CONCLUSIONS

As stated earlier, consistent with US EPA's EJ Toolkit, a situation may pose an EJ concern when an action has or may have *both* a "disproportionately high" *and* an "adverse" impact on a community. In this Draft EJ Assessment, US EPA evaluated the potential for disproportionately high impacts to the community of concern by comparing it to a reference community. For adversity, US EPA evaluated both the potential overall adverse impact to the community of concern from multiple sources and the potential adverse impact to the community of concern from KHF. For every indicator related to KHF activities, US EPA evaluated risk and/or modeling information to assess the potential for adverse effects and found no case where KHF causes a potential adverse impact to the community. Thus, based on the indicators analyzed in this Draft EJ Assessment, US EPA has not found evidence that the communities of Kettleman City and Avenal experience adverse impacts from KHF.

However, for the broader community (i.e. potential exposures within Kettleman City and Avenal unrelated to the KHF facility), risk and modeling information for other activities in the local area is not available. Therefore, US EPA is unable to determine whether or not the communities of Kettleman City and Avenal suffer from EJ impacts from activities unrelated to KHF. More specifically, US EPA makes an "inconclusive" finding about whether impacts from diesel and pesticides pose a disproportionately high and adverse impact to the communities of Kettleman City and Avenal.

Based on the analysis of social indicators, US EPA finds that in the community of concern many of the community residents speak Spanish. US EPA has considered this finding in planning public participation activities, and the next section describes the proposed public participation activities.

What is US EPA Doing in the Permitting Process Related to the EJ Assessment?

As noted above, US EPA did not find that activities at KHF adversely impact either Kettleman City or Avenal residents. Nevertheless, US EPA considered information gathered during the Draft EJ Assessment in reviewing the KHF permit application. Specifically, US EPA used its preliminary analysis of the assessment indicators to help highlight areas of concern during the permit application review process. In doing so, US EPA, consistent with its authority under TSCA, proposes the following actions: 1) include proposed permit conditions in the Draft PCB Permit that increase public health and

[76] More information on these designations can be found at: http://bhpr.hrsa.gov/shortage/

environmental safeguards, 2) explore ways to better ensure compliance, and 3) improve public participation processes related to issuance of the permit to enhance community involvement.

A) Human Health and the Environment

The following are some examples of proposed permit conditions that respond to community concerns raised in the Draft EJ Assessment:

1) A "Preparedness, Prevention, and Emergency Response" condition specifies actions necessary to provide a comprehensive approach to emergency preparedness, prevention, and response. The actions include mobilization of on-site and off-site emergency responders. The condition also requires notice of spills and accidents to multiple levels of authorities.

2) An "Air Risk Assessment" condition requires a PCB air risk assessment process that could include sampling to track releases of PCB's both as a gas and associated with windswept dust. This condition will determine if air-borne PCBs are released from the facility.

Please see the full Draft PCB Permit for a full listing of conditions. Please note, these conditions will only become effective upon issuance of a Final PCB Permit that contains them, and this Draft EJ Assessment in no way predetermines US EPA's Final PCB Permit decision on the proposed Draft PCB Permit after review of all comments submitted on the permit.

B) Compliance Monitoring

Over the past five years, the California Regional Water Quality Control Board and California Department of Toxic Substances Control have inspected KHF approximately twice per year and will likely continue to inspect KHF at the same frequency. Under the proposed Draft PCB Permit, US EPA will receive reports submitted to the State of California under the state RCRA permit that concern PCB waste-related activities. US EPA will have increased information for reviewing compliance of the facility with TSCA requirements. With this additional information, US EPA intends to increase its monitoring of the facility's compliance with TSCA requirements.

In addition, KHF will continue to be a priority in US EPA inspection planning. These inspections normally consist of a review of the daily maintenance reports, incoming and outgoing manifests, monitoring records, and exception reports as well as an inspection of the PCB storage and landfill disposal units. Moreover, US EPA intends to include copies of final inspection reports in the public information repository to the extent permissible under agency law and practice pertaining to the confidentiality of information contained in those reports.

C) Public Participation

US EPA will take many measures to solicit meaningful participation by community residents in providing comments to the Draft PCB Permit renewal and the associated Draft EJ Assessment. Below are examples of public participation steps that respond to specific community concerns identified during the Draft EJ Assessment process. These actions go beyond typical public participation efforts in similar situations.

1) US EPA will establish an information repository at the Kettleman City branch of the Kings County Library. The information repository will include the documents (i.e., administrative record) US EPA considered in preparing the Draft PCB Permit. The purpose of the information repository is to make information readily available to people who seek to understand the basis for US EPA's proposal to issue the Draft PCB Permit. US EPA selected an information repository with a location and hours of operation convenient to the community. US EPA intends to occasionally update the repository with reports of interest to the public about PCB waste handling, storage, disposal, and monitoring at the facility.

2) US EPA will make a decision on the Draft PCB Permit after the public has had adequate time to review the proposed action and submit comments and after US EPA has duly considered those comments. The public will have at least 60 days to review and submit written comments. The public may also submit verbal comments during the public hearing. Members of the public can request extensions to this comment period.

3) During the public comment period US EPA will conduct two public meetings and one public hearing. During the public meetings US EPA will explain and discuss the Draft PCB Permit with the public. During the public hearing, US EPA will formally accept comments in English or Spanish on the Draft PCB Permit. US EPA will consider the written and verbal comments before making a decision on the Draft PCB Permit.

4) The administrative record for the Draft PCB Permit that US EPA will make available for public review will contain all documents relied upon in making the permit decision at KHF. The community specifically requested that certain documents be made publicly available, such as the US EPA policy on PCB enforcement and the 2005 settlement the facility entered into for monitoring violations under TSCA. US EPA has included these documents in the administrative record and placed in the information repositories.

5) The US EPA will translate key public meeting materials and meeting announcements into Spanish. In addition, US EPA will provide simultaneous English/Spanish translation at the public meetings and hearing and will write public materials in non-technical language.

Public Comment on the Draft EJ Assessment

Because an important part of an EJ Assessment is identifying community concerns, US EPA is especially interested in your feedback on this section. In addition, US EPA is interested in feedback on the EJ indicators that were selected and how well they characterize the concerns in Kettleman City and Avenal. If anyone has additional concerns or additional data that US EPA should include in the Final EJ Assessment, please submit written comments or attend the public hearing and provide spoken comments.

The public can give comments on the Draft EJ Assessment from February 20, 2007, until April 23, 2007. During this public comment period, US EPA will hold public workshops in Kettleman City on March 12 and March 27 to discuss the Draft EJ Assessment and Draft PCB Permit with the public. Immediately after the second public workshop, US EPA will hold a formal public hearing to collect verbal comments in Spanish or English from the public about the Draft PCB Permit and the Draft EJ Assessment. Anyone can also send written comments to Debbie Lowe (see contact information below).

What will EPA do with the public comments?

After US EPA closes the public comment period, we will review and consider all comments for both the Draft EJ Assessment and the Draft Permit, prepare a summary of responses, and make a decision on the Draft Permit. The decision could be to a) issue the Draft Permit as a Final Permit, b) revise the Draft Permit and issue it as a Final Permit, or c) deny the CWM request for a permit. US EPA will also prepare a Final EJ Assessment.

For questions or comments about the Draft EJ Assessment, contact:

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APPENDIX A: EJ Assessment Methodology

The method and framework used in this Assessment were based on the EJ Toolkit developed by US EPA's Office of Environmental Justice (OEJ).[77] The EJ Toolkit recommends conducting EJ Assessments in a tiered approach, where a Screening Level Evaluation ("EJ Screen") is completed first. The EJ Screen can be conducted using US EPA's online Geographic Assessment Tool. If the EJ Screen indicates a possible environmental justice concern for which US EPA could be of assistance, the Toolkit suggests that US EPA conduct a more Refined EJ Assessment.

Consistent with the EJ Toolkit, US EPA used the Environmental Justice Geographic Assessment Tool (EJGAT)[78] to conduct an EJ Screen of the community within 5 miles of the Kettleman Hills Facility. The EJ Screen (see Appendix C) indicated that this is an area of potential EJ concern because four indicators exceeded threshold values, in this case, state average values: race distribution, ability to speak English, poverty level, and hazardous waste sites. Based on these results and consistent with the EJ Toolkit, US EPA decided to conduct a more Refined EJ Assessment to better understand the economic, social, environmental, and health conditions of the community.

EJ indicators are data from national or state databases that highlight some aspect of current conditions and trends in the environment or within a community or geographic area. They provide information that can be used in an environmental justice assessment to supplement, as appropriate, information more specific to the environmental decision being evaluated (e.g., impacts from a facility being sited or permitted).[79] As set forth in the EJ Toolkit, the Refined EJ Assessment evaluates EJ indicators in four categories: environmental, health, economic, and social. Each category of indicators serves a different purpose:

- The **environmental indicators** provide data about the physical attributes of a community, including potential sources of environmental stressors, the relative levels of stressors to which community residents are being exposed, and adverse impacts that may have resulted. The environmental indicators also assist US EPA in evaluating the potential for disproportionately high and adverse environmental impacts on the community.

- The **health indicators** provide information on the general health of the community's residents and their ability to cope with environmental stresses. It is usually not possible to conclusively demonstrate whether the existence or cause of increased incidences of diseases is related to exposure to specific contaminants.[80]

- The **social indicators** reveal trends about the general socio-demographic aspects of the community. Social indicators also provide information on the ability of the community to meaningfully participate in the decision-making process.

- The **economic indicators** reveal trends about the community's economic well-being. Assessing income levels is important to an environmental justice assessment because low-income populations may be more vulnerable than the general population to adverse environmental risks and impacts (i.e., because of income-based health disparities).

This section describes how the EJ Assessment Methodology provided in the EJ Toolkit was applied for this Draft EJ Assessment.

[77] US EPA, Toolkit for Assessing Potential Allegations of Environmental Injustice ("EJ Toolkit"), 2004, p. 20. The EJ Toolkit serves as a reference guide to assist Agency personnel in assessing potential allegations of environmental injustice and to provide a framework for understanding national policy on environmental justice. http://www.epa.gov/compliance/resources/policies/ej/ej-toolkit.pdf

[78] The Environmental Justice Geographic Assessment Tool (EJGAT) is a web-based GIS tool that provides information relevant to assessing adverse health or environmental impacts, aggregate or cumulative impacts, unique exposure pathways, vulnerable or susceptible populations, or lack of capacity to participate in decision making process among other conditions. It is available to the public at http://www.epa.gov/compliance/environmentaljustice/assessment.html

[79] EJ Toolkit, page 24

[80] EJ Toolkit, page 41

The EJ Toolkit suggests that an EJ Assessment should be made up of the following four phases:

Phase 1: Problem formulation, which includes identifying the community of concern, context, scope and endpoints of the assessment and preliminarily identifying the reference community;
Phase 2: Data collection which includes identifying environmental sources and likelihood of exposure;
Phase 3: Assessment of the potential for adverse environmental human health impacts by determining the potential effects of the stresses on the environment and looking at characteristics of the environment that might influence vulnerability of population to those stresses; and
Phase 4: Assessment of the potential for disproportionately high and adverse impacts by identifying an appropriate reference community and comparing impacts on it with potential impacts on community of concern, and whether or not the situation is one which US EPA can be of assistance.

For this EJ Assessment, Phase 3 and Phase 4 were conducted concurrently.

PROBLEM FORMULATION

Context and Scope

US EPA is conducting this EJ Assessment (1) because the surrounding communities have self-identified themselves as EJ communities; and (2) to support the TSCA permit application review process.

The scope of the EJ Assessment will include issues (1) raised by interested parties including the communities of concern, (2) related to the operations at the facility, (3) raised in CWM's application, and (4) dictated by legal authority available to US EPA.

Community of Concern

The community located in Kettleman City (3.5 miles from KHF) has identified itself as a potential community of concern. Because Avenal is also located near KHF (6.5 miles away), and exhibits demographic characteristics similar to those of Kettleman City, US EPA has included Avenal in this analysis. Kettleman City is located within the zip code 93239, and Avenal is located within the zip code 93204.

Reference Community

The residents in Kettleman City have made claims that they are more impacted than other communities in California. The reference community, or the community that the potential EJ community will be compared to for the analysis, is often chosen based on the opinions of the impacted community. Thus, generally for this EJ Assessment, US EPA has chosen the State of California as the reference community. For the EJ indicators related to air quality, San Joaquin Valley Air Basin was generally chosen as the reference community because the community of concern is a rural community, and by using San Joaquin Valley as the reference community, the community of concern is compared with other similar rural communities. For some EJ indicators, the data was not available for the State of California or for the San Joaquin Valley Air basin. In these cases, selection of the reference community was chosen based on data availability.

In some cases, because of the complexity of the data, there is no accepted or simple methodology for how to compare the data for the community of concern to the reference community. In these cases, the data is not quantitatively compared to a reference community, but qualitatively compared to the reference community.

DATA COLLECTION

Phase 2 of the EJ Assessment focuses on collecting information regarding known sources of potential exposure for both the community of concern and the reference community. An effort was made to include EJ indicators that address the specific concerns raised by the community. In conducting this EJ Assessment, US EPA reviewed data and other information obtained from State and local governmental agencies, the community, and its own files. Data sources are clearly defined throughout the body of this document.

EVALUATION OF THE POTENTIAL FOR DISPROPORTIONATE IMPACTS AND THE POTENTIAL FOR ADVERSE IMPACTS

Consistent with provisions of the US EPA's EJ Toolkit, a situation may pose an environmental justice concern where an action has or may have **both** a "disproportionately high"[81] **and** "adverse"[82] impact on a community. An action that has an adverse effect, for example, would not necessarily trigger environmental justice concerns if it affected many populations equally. For example, the San Joaquin Valley air basin violates ozone standards, so ozone may lead to adverse health effects in multiple parts of the Valley, not just in Kettleman City and Avenal. More details about this example appear later in Section VI. Similarly, a "disproportionately high" impact is not necessarily an environmental justice concern unless it is also adverse.

To determine if a potential impact is disproportionately higher in the community of concern than in the reference community, the indicator values for the community of concern are compared with the values for the appropriate reference community.

In evaluating the potential for adverse impacts, the purpose is to determine whether the community of concern might be exposed to environmental stresses of sufficient magnitude to potentially cause adverse effects on their health. This involves examining both the risks associated with environmental exposures in the community and existing health conditions in the community.

For the environmental data, risks are evaluated by comparing current exposure levels to regulatory benchmarks or standards.

Existing health conditions in the community of concern are an important part of this EJ Assessment. Regardless of whether the existing health conditions can be attributed to specific sources of environmental stress, such information does indicate whether the community might be more sensitive to some stresses than other communities.

In situations where there is no appropriate benchmark or risk values for the EJ indicators and the analysis of health data is inconclusive, the EJ indicators cannot reveal whether there is a potential adverse impact or not.

APPENDIX B:

Code of Federal Regulations**.** Title 40: Protection of Environment § 761.77 Coordinated approval.

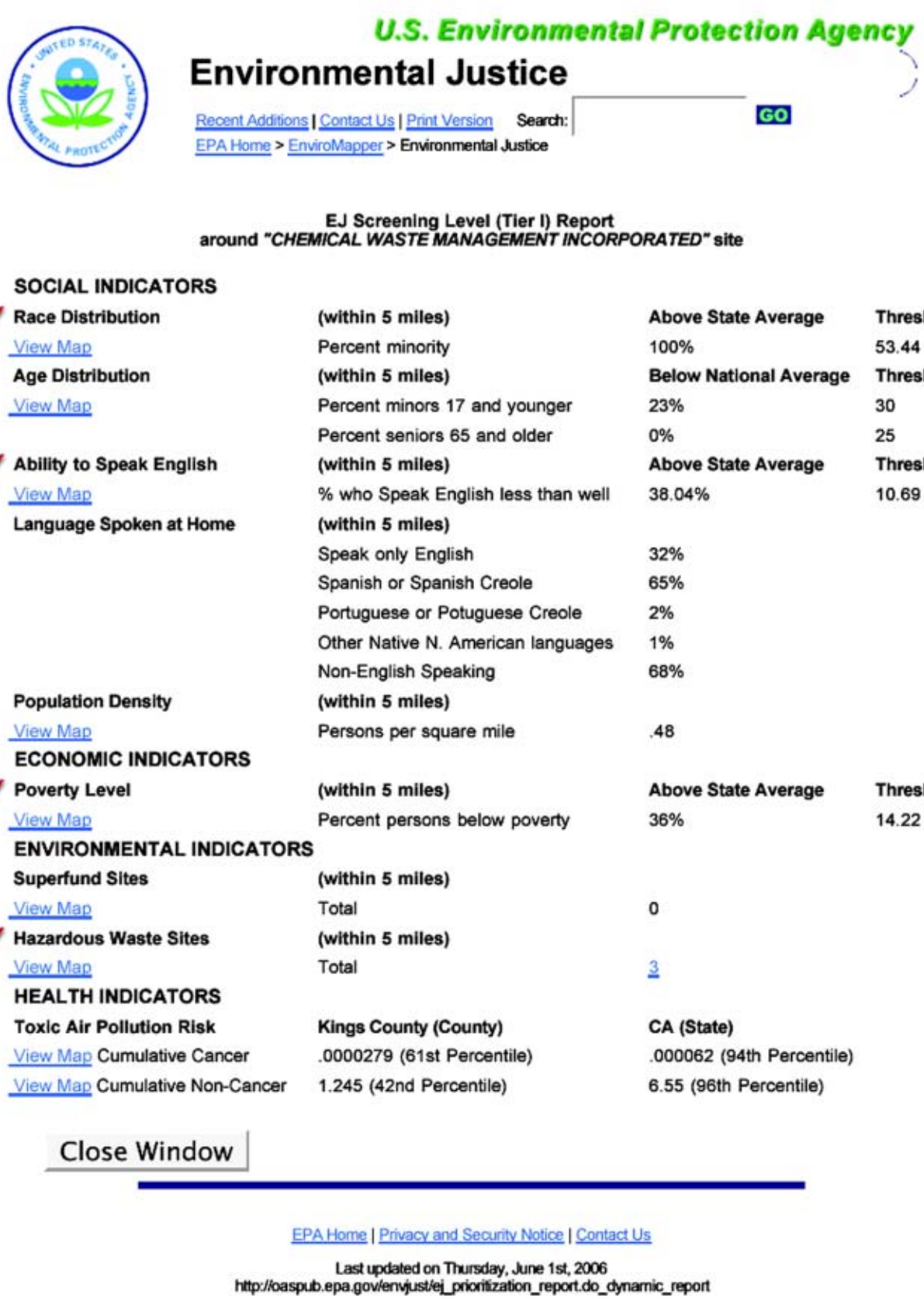
Under TSCA and its implementing regulation, US EPA may have grounds to deny a permit if the applicant does not demonstrate that four criteria (found at 40 CFR761.77 (b)) have been met. Below are these four criteria in the section of the Code of Federal Regulations dealing with a PCB coordinated approval. US EPA has reviewed the application for the KHF facility and determined that KHF has met the four criteria in 40 CFR761.77 (b). More information on this determination is in the information repository.

(a) *General requirements.* Notwithstanding any other provision of this part, the US EPA Regional Administrator for the Region in which a PCB disposal or PCB commercial storage facility described in paragraphs (b) and (c) of this section is located may issue a TSCA PCB Coordinated Approval to the persons described in those paragraphs if the conditions listed in this section are met. A TSCA PCB Coordinated Approval will designate the persons who own and who are authorized to operate the facilities described in paragraphs (b) and (c) of this section and will apply only to such persons. All requirements, conditions, and limitations of any other permit or waste management document cited or described in

[81] The EJ Toolkit calls for comparison with a reference community to determine if an impact is "disproportionately high." EJ Toolkit, p. 20.
[82] An indicator can show an "adverse" effect, for example, if exposures are above chemical-specific environmental quality benchmarks for environmental media (e.g. water quality criteria) values for those contaminants. EJ Toolkit, p. 68.

paragraphs (b) and (c) of this section, as the technical or legal basis on which the TSCA PCB Coordinated Approval is issued, are conditions of the TSCA PCB Coordinated Approval.
(1) Persons seeking a TSCA PCB Coordinated Approval shall submit a request for approval by certified mail, to the US EPA Regional Administrator for the Region in which the activity will take place. Persons seeking a TSCA PCB Coordinated Approval for a new PCB activity shall submit the request for approval at the same time they seek a permit, approval, or other action for a PCB waste management activity under any other Federal or State authority.
(i) The request for a TSCA PCB Coordinated Approval shall include a copy of the letter from US EPA announcing or confirming the US EPA identification number issued to the facility for conducting PCB activities; the name, organization, and telephone number of the person who is the contact point for the non-TSCA Federal or State waste management authority; a copy of the relevant permit or waste management document specified in paragraphs (b) and (c) of this section, including all requirements, conditions, and limitations, if the US EPA Regional Administrator does not have a copy of the document, or a description of the waste management activities to be conducted if a permit or other relevant waste management document has not been issued; and a certification that the person who owns or operates the facility is aware of and will adhere to the TSCA PCB reporting and recordkeeping requirements at subparts J and K of this part.
(ii) The US EPA Regional Administrator shall review the request for completeness, for compliance with the requirements of paragraphs (b) and (c) of this section, and to ensure that the PCB activity for which approval is requested will not present an unreasonable risk of injury to health or the environment. The US EPA Regional Administrator shall either:
(A) Issue a written notice of deficiency explaining why the request for approval is deficient. If appropriate, the US EPA Regional Administrator may either:
(*1*) Request additional information to cure the deficiency.
(*2*) Deny the request for a TSCA PCB Coordinated Approval.
(B) Issue a letter granting or denying the TSCA PCB Coordinated Approval. If the US EPA Regional Administrator grants the TSCA PCB Coordinated Approval, he or she may acknowledge the non-TSCA approval meets the regulatory requirements under TSCA as written, or require additional conditions the US EPA Regional Administrator has determined are necessary to prevent unreasonable risk of injury to health or the environment.
(C) If the US EPA Regional Administrator denies a request for a Coordinated Approval under paragraphs (a)(1)(ii)(A) or (a)(1)(ii)(B) of this section, the person who requested the TSCA PCB Coordinated Approval may submit an application for a TSCA Disposal Approval.
(2) The US EPA Regional Administrator may issue a notice of deficiency, revoke the TSCA PCB Coordinated Approval, require the person to whom the TSCA PCB Coordinated Approval was issued to submit an application for a TSCA PCB approval, or bring an enforcement action under TSCA if he or she determines that:
(i) Conditions of the approval relating to PCB waste management activities are not met.
(ii) The PCB waste management process is being operated in a manner which may result in an unreasonable risk of injury to health or the environment.
(iii) The non-TSCA approval expires, is revoked, is suspended, or otherwise ceases to be in full effect.
(3) Any person with a TSCA PCB Coordinated Approval must notify the US EPA Regional Administrator in writing within 5 calendar days of changes relating to PCB waste requirements in the non-TSCA waste management document which serves as the basis for a TSCA PCB Coordinated Approval. Changes in the ownership of a commercial storage facility which holds a TSCA PCB Coordinated Approval shall be handled pursuant to §761.65(j).
(b) Any person who owns or operates a facility that he or she intends to use to landfill PCB wastes; incinerate PCB wastes; dispose of PCB wastes using an alternative disposal method that is equivalent to disposal in an incinerator approved under §761.70 or a high efficiency boiler operating in compliance with §761.71; or stores PCB wastes may apply for a TSCA PCB Coordinated Approval. The US EPA Regional Administrator may approve the request if the US EPA Regional Administrator determines that the activity will not pose an unreasonable risk of injury to health or the environment and the person:
(1)(i) Has a waste management permit or other decision or enforcement document which exercises control over PCB wastes, issued by US EPA or an authorized State Director for a State program that has

been approved by US EPA and is no less stringent in protection of health or the environment than the applicable TSCA requirements found in this part; or
(ii) Has a PCB waste management permit or other decision or enforcement document issued by a State Director pursuant to a State PCB waste management program no less stringent in protection of health or the environment than the applicable TSCA requirements found in this part; or
(iii) Is subject to a waste management permit or other decision or enforcement document which is applicable to the disposal of PCBs and which was issued through the promulgation of a regulation published in Title 40 of the Code of Federal Regulations.
(2) Complies with the terms and conditions of the permit or other decision or enforcement document described in paragraph (b)(1) of this section.
(3) Unless otherwise waived or modified in writing by the US EPA Regional Administrator, complies with §761.75(b); §761.70(a)(1) through (a)(9), (b)(1) and (b)(2), and (c); or the PCB storage requirements at §§761.65(a), (c), and (d)(2), as appropriate.
(4) Complies with the reporting and recordkeeping requirements in subparts J and K of this part.
(c) A person conducting research and development (R&D) into PCB disposal methods (regardless of PCB concentration), or conducting PCB remediation activities may apply for a TSCA PCB Coordinated Approval. The US EPA Regional Administrator may approve the request if the US EPA Regional Administrator determines that the activity will not pose an unreasonable risk of injury to health or the environment and the person:
(1)(i) Has a permit or other decision and enforcement document issued or otherwise agreed to by US EPA, or permit or other decision and enforcement document issued by an authorized State Director for a State program that has been approved by US EPA, which exercises control over the management of PCB wastes, and that person is in compliance with all terms and conditions of that document; or
(ii) Has a permit, which exercises control over the management of PCB wastes, issued by a State Director pursuant to a State PCB disposal program no less stringent than the requirements in this part.
(2) Complies with the terms and conditions of that permit or other decision and enforcement document.
(3) Complies with the reporting and recordkeeping requirements in subparts J and K of this part.
[63 FR 35456, June 29, 1998]



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EJ Screening Level (Tier I) Report
around *"CHEMICAL WASTE MANAGEMENT INCORPORATED"* site

SOCIAL INDICATORS			
✓ **Race Distribution**	**(within 5 miles)**	**Above State Average**	**Threshold**
View Map	Percent minority	100%	53.44
Age Distribution	**(within 5 miles)**	**Below National Average**	**Threshold**
View Map	Percent minors 17 and younger	23%	30
	Percent seniors 65 and older	0%	25
✓ **Ability to Speak English**	**(within 5 miles)**	**Above State Average**	**Threshold**
View Map	% who Speak English less than well	38.04%	10.69
Language Spoken at Home	**(within 5 miles)**		
	Speak only English	32%	
	Spanish or Spanish Creole	65%	
	Portuguese or Potuguese Creole	2%	
	Other Native N. American languages	1%	
	Non-English Speaking	68%	
Population Density	**(within 5 miles)**		
View Map	Persons per square mile	.48	
ECONOMIC INDICATORS			
✓ **Poverty Level**	**(within 5 miles)**	**Above State Average**	**Threshold**
View Map	Percent persons below poverty	36%	14.22
ENVIRONMENTAL INDICATORS			
Superfund Sites	**(within 5 miles)**		
View Map	Total	0	
✓ **Hazardous Waste Sites**	**(within 5 miles)**		
View Map	Total	3	
HEALTH INDICATORS			
Toxic Air Pollution Risk	**Kings County (County)**	**CA (State)**	
View Map Cumulative Cancer	.0000279 (61st Percentile)	.000062 (94th Percentile)	
View Map Cumulative Non-Cancer	1.245 (42nd Percentile)	6.55 (96th Percentile)	

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Last updated on Thursday, June 1st, 2006
http://oaspub.epa.gov/envjust/ej_prioritization_report.do_dynamic_report

APPENDIX D: Excerpts from article "Health Effects of Residence Near Hazardous Waste Landfill Sites"

In 2000, Martine Vrijheid published "Health Effects of Residence near Hazardous Waste Landfill Sites: A Review of Epidemiologic Literature."[83] This article surveys many articles in the current epidemiologic literature on health effects in relation to residence near landfill sites. This study explains that if real risks associated with landfills exist, many factors make that connection difficult to establish scientifically. Nevertheless, it concludes that studies still "may indicate real risks associated with residence near landfill sites." Excerpts from the article appear below.

A general problem in epidemiologic studies of landfill sites, whether studying single or multiple sites, is that there is insufficient information regarding potential human exposures from landfill sites. Although landfill sites are numerous and widespread, very few have been evaluated with respect to both the types of chemicals they contain and the extent to which they may be releasing chemicals. Moreover, although chemicals have been found to migrate off site at a number of sites that have been thoroughly investigated, we know very little about the extent to which residents living near a site are exposed to these chemicals. A few studies that have attempted to measure certain chemicals in blood and urine of populations near waste sites have generally not found increased levels of volatile organic compounds (VOCs), mercury, or PCBs. Because knowledge of whether and to what extent substances from waste sites reach the human population is still largely lacking, and because resources are rarely available to carry out extensive exposure measurements or modeling, epidemiologic studies have based the assessment of exposure to landfills mainly on surrogate measures such as residence in an area close to a waste site or distance of residence from a waste site. The use of such surrogate, indirect exposure measurements can lead to misclassification of exposure which, if not different for diseased and nondiseased persons, will decrease the sensitivity of the study to find a true effect. In addition to being hampered by insufficient exposure data, the study of landfill exposures is complicated by the fact that if residential populations are exposed to chemicals from landfill sites, it will generally be to low doses of mixtures of chemicals over long periods of time. Associations with such low-level environmental exposures in the general population are by their nature hard to establish. Low-dose exposures are generally expected to generate small increases in relative risk that will be difficult to distinguish from noise effects introduced by confounding factors and biases.

In most of the landfill studies reviewed in this article, residents near waste sites are studied without knowledge of the exact route(s) of exposure to chemicals from the site. Migration of hazardous substances into groundwater is often an important environmental concern in relation to landfill sites, which may represent a public health problem, especially when a site is located near aquifers supplying public drinking water. However, in many situations the drinking water supply of residents near waste sites does not originate from the local area. For people living in the vicinity of these sites, other routes of exposure may be of more concern. Landfill sites may be a source of airborne chemical contamination via the off-site migration of gases and via particles and chemicals adhered to dust, especially during the period of active operation of the site. Very little is known about the likelihood of air exposure from landfill sites through landfill gases or dust. At some of the sites described below, low levels of volatile organic chemicals have been detected in indoor air of homes near landfill sites, in outdoor air in areas surrounding sites or in on-site landfill gas. Other possible routes of exposure include contamination of soil, ground, and surface water, which may lead to direct contact or pollution of indoor air in the case of evaporation of VOCs into basements of nearby houses. Contamination via the food chain may sometimes be of concern for nearby residents in the case of consumption of home-grown vegetables. Drinking water is a possible route of exposure only if water for domestic use is locally extracted. If this is the case, other domestic water uses (bathing, washing) may also lead to exposure via inhalation of evaporated VOCs and/or direct contact.

Some issues related to specific health outcomes should be noted in both single- and multisite studies. A general problem in studies of cancer incidence is the long latency period between exposure and clinical manifestation of the cancer. Studies may not always allow for a long enough latency period, which reduces

[83] Available online at: *http://ehpnet1.niehs.nih.gov/docs/2000/suppl-1/101-112vrijheid/abstract.html*

their power to pick up long-term effects. Moreover, because of the long latency period, a considerable number of people may have migrated into or out of the exposed areas between time of exposure and time of diagnosis, which will lead to misclassification of exposures.

The investigation of single landfill sites has been important as a response to community concerns; many of the single-site studies discussed below are prompted by public concerns, often under considerable political pressure. This means that they are prone to recall and reporting biases that may weaken the investigations and partly explain increases in reported health outcomes. Single-site studies have examined a vast range of possible health outcomes, often without a specific disease hypothesis being proposed a priori. Such "fishing expeditions" are thought to be of less scientific value than studies that start with a clear hypothesis. Including these fishing expeditions in evaluating the consistency of findings across multiple studies is important nevertheless when assessing evidence for health risks.

A less avoidable problem in single-site studies is that the size of populations living near waste sites generally is small and, especially when the outcome is a rare disease, this can seriously limit the statistical power of an investigation.

The presence of large quantities of mixtures of potentially hazardous chemicals in landfill sites close to residential populations has increasingly caused concern. Concerns have led to a substantial number of studies on the health effects associated with landfill sites. From this review we can conclude that increases in risk of adverse health effects have been reported near individual landfill sites and in some multisite studies. Although biases and confounding factors cannot be excluded as explanations for these findings, the findings may indicate real risks associated with residence near certain landfill sites.

APPENDIX E: List of Acronyms

AQI	Air quality index
CED	Communities and Ecosystems Division
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CO	Carbon monoxide
CUP	Conditional use permit
CWM	Chemical Waste Management
DTSC	Department of Toxic Substances Control
DPR	Department of Pesticides Regulation
EBL	Elevated blood lead
EIR	Environmental impact report
EJ	Environmental Justice
EPCRA	Emergency Planning and Community Right-to-Know
FIFRA	Federal Insecticide Fungicide and Rodenticide Act (FIFRA)
FTTS	FIFRA/TSCA Tracking System
HI	Hazard index
HPSA	Health Professional Shortage Area
IDEA	Integrated Data for Enforcement Analysis
IMU	Index of Medical Underservice
IWMB	Integrated Waste Management Board
KHF	Kettleman Hills Facility
LQG	Large quantity generator
MCL	Maximum contaminant levels
MSW	Municipal solid waste
MUA	Medically underserved area
MUP	Medically underserved population
M3	cubic meters

NATA	National air toxics assessment
NNISW	Nonhazardous, nonputrescible, industrial solid waste
NO2	Nitrogen dioxide
NOx	Nitrogen oxides
NON	Notice of non-compliance
NOV	Notice of violation
NRC	National Response Center
NRS	National Response System
O3	Ozone
OEJ	Office of Environmental Justice
OES	Office of Emergency Services
OPR	Office of Planning and Research
PBT	Persistent, bioaccumulative and toxic
PCB	Polychlorinated Biphenyl
PG&E	Pacific Gas & Electric
PM	Particulate matter
ppb	parts per billion
ppm	parts per million
PUR	Pesticide Use Report
RCRA	Resource Conservation and Recovery Act
RfC	Reference concentration
ROG	Reactive organic gases
RSEI	Risk Screening Environmental Indicators
SDWIS	Safe Drinking Water Information System
SIC	Standard industrial classification
SO2	Sulfur dioxide
SQG	Small quantity generator
TDS	Total dissolved solids
THM	Trihalomethanes
TRI	Toxics Release Inventory
TSCA	Toxic Substances Control Act
TSD	Treatment, storage and disposal
US EPA	United States Environmental Protection Agency
VOC	Volatile organic compound
ug	microgram
ug/dL	micrograms per deciliter